ARCHIVES OF OPHTHALMOLOGY.

DISTURBANCE OF THE COLOR-SENSE IN NEURITIS.

By Dr. AUGSTEIN, of Bromberg, Prussia.

(*See plate ix.*)

Translated by Dr. H. Knapp.

THE examination of the periphery of the visual field in affections of the nervous apparatus of the eye proved to be of great importance so soon as the acquired color-blindness had received greater attention. When disturbances of the color-sense in atrophy of the optic nerve were extensively investigated by different authors (Leber, Galezowski, Schirmer, Schön, Treitel, and others), it was found that they were not limited to that affection alone, but played an important part also in others. Nevertheless, on perusing the literature on the subject, it is surprising to notice that in the inflammatory diseases of the optic nerve the color-sense has comparatively seldom been examined; if mentioned at all it has been in cases in which the inflammation was passing into atrophy. Apart from such cases, disturbances of the color-sense in neuritis are reported as being either insignificant or absent. If repeated examinations revealed the color-sense to be markedly disturbed, it was alleged that atrophy was on its way, or imminent.

The object of the following communication is to report on the extensive investigations we made during the last two years in the clinic of Dr. Schneller, who was the first to direct our attention to the subject. All patients that presented disease of the background of the eye, were subjected

to the investigation of the visual field for color-perception. Thus I have before me four hundred charts of the visual color-field, half of which refer to patients with neuritis. When the neuritis was present on one side only, the examination of the healthy eye was never omitted, for the sake of comparison. The examinations were repeated at regular intervals.

I may be permitted briefly to describe our *method of examination.*

To have good light the examinations were made at noon-time, and on clear days only. The point of fixation was the centre of the arc of the perimeter; the yellow spot, consequently, corresponding to the centre of the field. As objects of examination dull-colored flower papers were used, namely, blue, yellow, red, and green, in squares of 1 *cm.*, pasted on black tablets. Yellow has, as far as I am aware, been used only in the first examinations by SCHÖN; afterwards it was dropped, on the supposition that it always is close to the limit of blue. It will be evident further on that we had good reason not to omit examining for yellow. That the size of the squares is of importance is now generally admitted, in spite of Woinow's previous statement to the contrary. To detect and map out central scotomas, even smaller squares than 1 *cm.* were required, down to 3, 2, and 1 *mm.* With these the patients' power of observation was not too highly taxed, for when one eye was sound, they at once recognized the color of these small squares; besides, the eyes of the examiner could always serve for comparison if the light was insufficient.

The tablets were moved from the periphery toward the centre. We began with a white square and notified the patient beforehand. He, expecting it, gave notice at the moment when the first bright shimmer struck his eye. When colored squares were used, the patient was not informed beforehand; he had to name the color as soon as he was able to recognize it, not waiting until it appeared fully. If we examine our own eyes we see with what certainty we are able to designate the point at which the approaching gray or white in which the color first appears

to the eye, turns at once into a distinctly recognizable color. Frequently I have obtained from repeated examinations the same results, yet it must be conceded that, at times, small variations may occur. In examining the upper part of the field, we always took care to raise the upper lid and draw the head back, in order to remove any impediment from the way of the incident rays of light. The influence of the nose during examinations of the inner part of the field was eliminated by slight turnings of the head. In spite of all precautions, even the physiological limits vary so much that, according to SCHÖN, a difference of 5°, even of 10°, cannot, under all circumstances, be considered as abnormal. Though examinations in the different stages of the disease and comparisons with the healthy eye give a certain value to differences of 10°, even of 5°, strict accuracy in this method is, as Schön also states, neither possible nor required.

Examination in four meridians seems to me sufficient in almost all cases. Looking over many color-field charts, in which more meridians are traced, we notice that, with rare exceptions, the additional meridians might have been left off without essentially changing the total tracings. In examining more than four meridans we do a superfluous work, which, bearing in mind the time of the physician and the fatigue of the patient, had better remain undone.

We must always remember that the physiological limits of the color-fields vary considerably in different persons, and are even influenced by accommodation and refraction. Hence the differences in the statements of authors—Aubert, Förster, Landolt, Schön, etc. *Yet I believe that we can designate a visual field as normal, when certain characteristic conditions are present*, which, from the investigations of others and my own experience, I desire to point out. Above all, the concentric arrangement and the normal succession of the color-limits appear of the greatest importance. Then it is to be noted that the color-blind zone which lies between the limit for white and that for blue has a breadth of about 10°; close by the limit for blue lies the limit for yellow, both often merging into each other; then follows the limit

for red; lastly, that for green, which has the smallest field. Investigations made in the manner described above have given me the following results:

	For white.	Blue.	Yellow.	Red.	Green.
Outward	90°	80°	Lies close by blue.	65°	50°
" and up . . .	70°	60°		45°	40°
Upward	50°	40°		33°	27°
" and in . . .	55°	45°		30°	25°
Inward	60°	45°		30°	25°
" and down . . .	60°	50°		35°	27°
Downward	72°	58°		45°	30°
" and out . .	85°	75°		55°	40°

The limits for red and green in the physiological state vary more than those for blue and yellow, and it is generally known that under pathological conditions they are first and most altered; next to this, as will be shown later, the limits for yellow, in many pathological conditions, are first changed. Yellow lying near blue in the healthy state, it will at once awaken suspicion to see it move toward and even beyond the limits of red and green. We must be more on our guard if we have to deal with a contraction of the limits for red and green; but from my experience I consider it to be pathological when in the upper, inner, and lower parts of the field the red limit sinks below 25°, the green limit below 20°; and in the outer part the red limit below 40°, the green limit below 30°. The personal variations of the extent of the color-fields have no bearing on a definite case when the other eye is healthy. Repeated examinations and the aid to be derived from a due appreciation of other symptoms are of great service in framing the diagnosis. *Reëntrant angles, even for one color, with normal outer limit, intermingling of the color-limits, destroying their normal succession and changing concentric curves into zigzag lines, must always be considered as pathological.* Apparently insignificant contractions in a certain direction, even of one color only, may justify the conclusion that the function of the conducting fibres is still disturbed.

I trust to be able to demonstrate these assertions by facts

found on examining patients; but before I begin to report cases, I desire to put the *chief results of our investigations* on record.

1. Every neuritis, let it end in atrophy or recovery, is accompanied by disturbance of the color-sense.

In both cases the degree of the disturbance may vary from total color-blindness to but slight limitations and irregularities of a single color. The duration of the disturbance varies in like manner.

2. The examination of the visual fields with pigment colors furnishes the surest data in estimating the course of a neuritis; sometimes it brings to light functional disturbances of the optic nerve when the ophthalmoscopic condition and the acuteness of central vision no longer show any abnormity; it is, therefore, the most delicate method of examination.

From many similar observations I select a case which during a long time characteristically showed the disturbances and improvements of the color-sense to its total restitution, even after a relapse.

Mr. G. Rohde, of S., æt. twenty-two years, called the first time Nov. 20, 1881, on account of impairment of sight in the right eye and pain in raising it. He is robust, of healthy appearance, free from syphilis, has never been ill, does not drink, smokes but little. Eight weeks previously, when lying in bivouac one night, his right side was drenched with rain. On awaking he experienced considerable pain in the right side of his head, which subsided, however, in a few days. Ten days ago he had pain on looking up, and alleges that then he first noticed the sight of the eye to be weak. L S almost $\frac{6}{6}$; R with + 1.5 and 1.0^c O° S = $\frac{5}{6}$—. Od very red, not prominent; its contours ill defined, arteries normal, veins slightly enlarged. No cerebral symptoms. The examination of the visual field shows normal conditions in the left eye—represented by fig. No. 1, plate ix.—; in the right—fig. No. 2—there was considerable contraction of all color-limits, with reëntrant angles. All colors are confined to a space of 30° in the vertical by 80° in the horizontal direction. Yellow is moved from the blue-limit to the inner side of red. No central scotoma. After inunction of mercurial ointment, abstraction of blood, etc., the vision improved rapidly, rising in twenty days to $\frac{6}{5}$. The contours of the od were

normal on the temporal, ill-defined on the nasal, side. The visual field now shows the condition represented in fig. No. 3; with S more than normal there are slight contractions of the outer limit, and very considerable contractions of all color-fields which partially intermingle, and are all indented. Yellow has enlarged, but does not yet reach the blue-limit. Three weeks later S was $\frac{2}{3}$ on either side. Both optic discs perfectly normal. The successive charts, taken at weekly intervals, show a gradual improvement of all abnormities. Jan. 26, '82, a perfectly normal chart—No. 4—was obtained. Three months later the patient complained again of impairment of sight in the right eye. The examination showed R E: S = $\frac{1}{4}$; od opaque, but well defined. For business reasons he declined treatment in the hospital. No sooner than July 10, '83—*i. e.*, after fifteen months, he came again, chiefly on account of pain in moving his right eye. S was $\frac{1}{30}$, od very opaque, margins well preserved, arteries normal, veins greatly dilated. He recognized no color with the right eye; all appeared lighter or darker gray. Abstraction of blood, July 13th, had no effect. Ordered: mercurial inunctions and 3.00 of iodide of potassium daily. Two days later he noticed himself that he could distinguish colors for the first time. July 16th S = $\frac{1}{6}$, and his visual field presented the tracings of fig. No. 5. The following charts, of July 21st with S = $\frac{1}{5}$, of July 25th with S = $\frac{1}{3}$, and of July 30th with S = $\frac{1}{2}$, showed a steady improvement. Central scotomas could never be found, not even with very small squares. The chart of July 30th was almost normal.

A similar series of charts in **rheumatic neuritis** refers to two ladies. Their histories resemble that of the previous case so closely, that I refrain from reproducing them. With them also the outer limit soon became normal, the color-fields, at first very much contracted, gradually enlarged, but had not yet reached the normal limits when S was = 1 or more. Yellow was reduced to the green-limit, occasionally with large central scotomas in both cases. In the one case (Mrs. F.), the first examination was made Nov. 22, '81, and only on Jan. 19, '82, the visual field showed normal limits, long after S and the ophthalmoscopic condition had become normal. Shortly after that time the other (right) eye had become affected. When it was examined, Feb. 7, '82, the left was examined likewise, and the renewed contractions of

the color-fields, as well as the presence of reëntrant angles, indicated the beginning of a relapse of the left-sided neuritis, though S was still good, and no subjective symptoms were present.

One example of inflammation of the optic nerve from cerebral causes, probably chronic meningitis (**descending neuritis**), was observed.

It is of special importance on account of its final recovery, though at first there was great functional derangement, and the duration of the affection was long.

Caroline Wiedom, æt. fifty-three, presented herself the first time Jan. 7, '82, complaining of impairment of sight in both eyes. She never had had any severe illness, and showed no signs of syphilis. During the last few months she had been subject to severe headache, dizziness in walking, nausea, and vomiting. No disorder of motility or sensibility. L H 3.5,[1] S = $\frac{5}{12}$. R E (?): S = $\frac{3}{60}$. Optic discs dull, but well defined on both sides. The visual field of the *left* eye shows slight contraction of the outer (white- or form-) limit, moderate for blue and yellow, very considerable for red, but particularly for green, which laterally is 12°, in other directions not over 10°. The field of the *right* eye is represented in figure No. 6. Contraction of the outer limit in every direction, most marked outward; of colors, blue and yellow alone are recognized, and they only in a sector extending 35° from the centre medially. Febr. 12th, S = $\frac{1}{24}$; the outer limit of Froider, color-limits the same, but in the inner-upper part, at the periphery, red is recognized in a zone between 5° and 25°, and green between 5° and 15°. March 15, 1882: S $\frac{1}{6}$, H 3.5, the color-field very little changed. Red and green have reached the centre; green is perceived in patches also in the lower, outer, and upper-outer parts at 40° and at 18°. The next chart, of June 27, '82, shows: S being = $\frac{6}{6}$, normal outer limits, a moderate contraction of all color-fields and reëntrant angles, most pronounced in green. The class entry, July 28, '82, shows, with H 3.5, and S = 1; limits equal to those of figure No. 4, consequently normal. Meanwhile the limits of the fields in the left eye have also gradually enlarged. July 28, '82, it showed normal fields, S = 1, H = 3.5. The

[1] When decimals are used in this and many other journals, without any specification, they refer to the metric system. In optical subjects they signify dioptries; in pharmaceutical, grams. The inch system will always be indicated by fractions, referring by preference to Paris inches; $\frac{1}{27}$ = 1.0 very nearly.—Ed.

charts of this eye resemble greatly those of rheumatic neuritis, excepting the fact that yellow lay close by blue. Central scotomas never were found.

In a number of cases of **syphilitic neuritis,** we have made examinations of the visual field, and repeated them in the different stages of the disease. The color-fields closely resemble those in rheumatic neuritis ; we noticed in particular the same contraction of the yellow-limit, which often touched the green. Nos. 7 and 8 show the fields of Mrs. B. on Feb. 16, '81. Roseola had appeared some months previously, glandular swellings were still present. Both optic discs were slightly opaque, with somewhat ill-defined margins. M = 1.75 ; S = $\frac{5}{6}$ o. u. After mercurial inunctions, both visual fields showed, Jan. 9, '82, with S = 1, normal white-limits, whereas the green-limit was still slightly contracted and indented, toward the nose only slightly exceeding 20° ; the other colors had normal fields. April 16, '83, after the mercurial treatment had been discontinued, the visual acuteness was diminished (L S = $\frac{2}{3}\frac{0}{1}$, R = $\frac{5}{6}\frac{5}{0}$), and very considerable contraction of all color-fields, showing that a relapse had taken place, and confirming our supposition that in January the morbid process had not ceased altogether, for the color-sense then was still somewhat disturbed. The patient did not return.

How marked the derangement of the color-sense in this form of neuritis, despite the preservation of good sight, may be, is seen in figure No. 9, representing the visual field of Mrs. L. K.'s right eye on June 4, '83, when S was = $\frac{3}{5}$. Mrs. K. received hospital treatment from April 24 to June 4, 1883, for double syphilitic neuritis. On the day of her admittance both eyes were E. S L = $\frac{5}{6}$, R = $\frac{5}{2}\frac{5}{4}$.

June 4, 1883, S > 1, and the visual field similar to No. 1. Further examinations showed R also a considerable enlargement of the color-limits ; they are, however, not yet normal, though S is almost 1. Patient is still under treatment.

In a fatal case of syphilis perniciosa with neuritis, it was the contraction of the color-fields that gave the first warning of the impending aggravation. The patient was admitted

with syphilitic neuritis, S = ½. The color-fields, at first very narrow, soon enlarged, but did not become normal, whereas S gradually became = 1. Then, with good vision preserved, the color-field contracted again, foreshadowing the coming rapid decay of vision. The sector-like defect in the lower, inner part ushered in progressive amaurosis. The autopsy discovered total atrophy of the optic nerves.

Lastly, I desire to mention the disturbances of the color-sense which we have found in **retro-bulbar neuritis**, exclusive of cases of toxic amblyopia. The central color-scotomas characteristic of this form of neuritis were never missing, and chiefly supported the diagnosis. Our investigations do not confirm the statement of Leber[1] that "in pure cases of this affection the periphery of the visual field does not exhibit any derangement or contraction," if this assertion is meant to comprise the color-fields. We have noticed, it is true, that occasionally, where the central acuteness of vision was still greatly impaired and a large central scotoma was present, the peripheric limits in the course of recovery became almost suddenly normal, but this seemed to occur in the later stages of the affection, and to demonstrate that in this disease the repair of the morbid alteration takes a centripetal course, contrary to the other kinds of neuritis. Accordingly the limits for blue and red first became normal, next that for red, last that for green.

Leopold Lietz, æt. twenty-six years, presented himself for the first time Jan. 6, 1883, complaining, for three days, of considerable impairment of sight in his left eye. He saw movements of the hand only in the upper part of F, and with this eye recognized no color, however large the object. The od was opaque, ill-defined, particularly toward the temple. Jan. 15th, S had improved to counting fingers at 2 *m*. The visual field on that day is seen in figure No. 10. Limit for form, normal; blue is recognized in a tolerably broad, yet not normal, zone at the periphery, and yellow in a narrow peripheric zone. In the centre a large scotoma for white and all colors. Jan. 18th, the patient counts fingers at 4 *m.*; the white- and blue-limits are normal; the zone for yellow is broader at the periphery, but red and green are not recognized, and the

[1] Text-book in Graefe-Sämish, p. 830.

central scotoma is unchanged. Margins of od well visible again. Jan. 27th, S = $\frac{1}{4}$. White- and blue-limits normal, yellow and red almost normal, green is perceived in a small zone at 40° in the upper-outer part, and also near the centre, though with very considerable limitation. The scotoma has greatly changed; it is recognizable with the aid of colors only, and is confined to a circle of 8° around the point of fixation. Feb. 3d, S = $\frac{3}{6}$; all color-limits are normal, excepting a small indentation for red and green. The central color-scotoma begins to clear up from the centre. Red and green in small squares are recognized in the centre, but not in a paracentric zone between 3° and 8°. Feb. 13th, S = $\frac{4.5}{6}$; the patient, satisfied with the result obtained, left off coming.

Quite a similar observation was made in the case of Mr. F. Müller, Feb. 4, 1883. With S = $\frac{1}{30}$, the gradual reëstablishment of the color-perception began at the periphery, after total color-blindness previously. The central scotoma, at first for white and colors, then for colors only, contracted gradually, but was still recognizable in three months.

The disturbances of the color-sense having manifested themselves so distinctly in every form of neuritis as to consider this method of examination the most delicate of all, it suggested itself to us to employ it also in those dull-red optic discs that are so frequently observed as the consequence of accommodative asthenopia. Slight limitations of the color-fields may be regarded as physiological, but the following case shows that also marked pathological limitations may occur in this difficulty.

Karl Dreyer, æt. twenty-six years, presented himself Dec. 5, 1882. He had worked intensely and perseveringly for an examination, till at last the blurring of the letters and severe pain in the eyes made reading and writing impossible. With + 3.5 S was L = $\frac{5}{15}$, R = 1, and the near point corresponding to his age. With the OS the same degree of H was found. Both optic discs were dark-red, margins well defined, arteries normal, veins congested. The visual field of the right eye (fig. No. 11) taken on the same day, shows the outer limit normal, all color-fields greatly contracted, yet their concentrical arrangement well enough preserved. Yellow is even more contracted than green. The visual field of the other eye is quite analogous. Convex glasses, rest, and darkening of his room relieved the discomfort. As early as

Dec. 15, '82, all color-fields were wider and concentrically arranged; yet blue reached laterally only 60°; yellow had extended beyond the limit of green, but was still within the limit of red. The visual field of the other eye was very similar. The hyperæmia of the optic discs had decreased. March 4, 1885, all inconvenience was removed, the congestion of the discs had disappeared, the visual fields and color-perception were normal.

After I had made some similar observations in accommodative asthenopia and one in myopia (Miss S., M. = 6.0, o. u. Prolonged sewing had produced congestion of ods and disturbance of the color-sense), I saw the first—and, as far as I am aware, the only—literary allusion to the subject under consideration. SCHÖN, namely, supposes that such disturbances occur by excessive efforts of accommodation. He says: "We can expect a corresponding impairment of eccentric vision with concentric limitation of the visual field, —both to be accounted for by the pronounced hyperæmia of the papillæ which in this category of cases is never absent." If Schön cites, however, the cases described by STEFFAN[1] under the title of retinal anæsthesia, in support of his supposition, I cannot agree with him, for these affections are not the result of accommodative tension, but the anomalies of accommodation—spasm and paralysis—are only symptoms of general nervous debility.

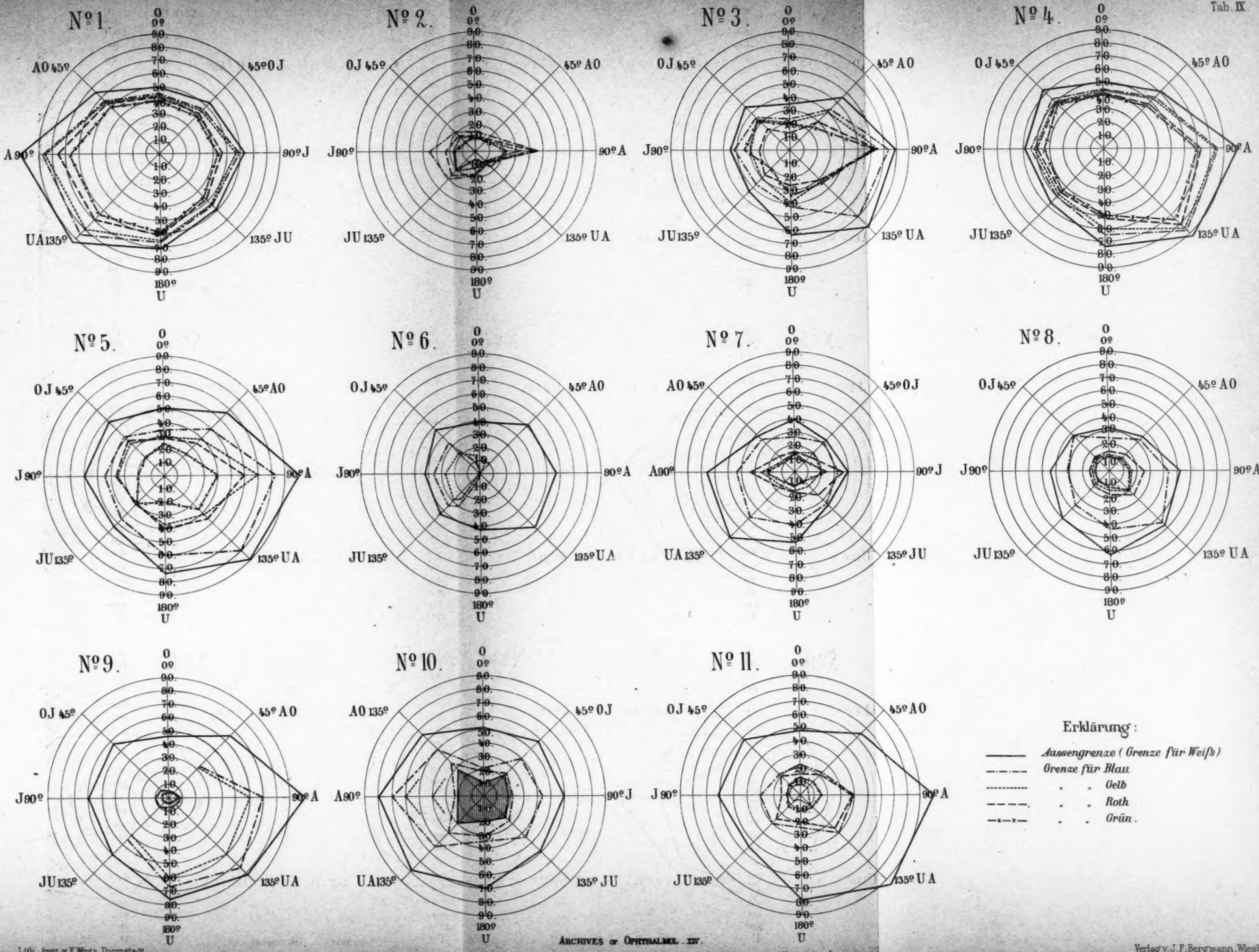
I think I do not overestimate the value of the discovery of disturbances of the color-sense in accommodative asthenopia, if I find in it a clue to the explanation of the color-disorder in neuritis. We may justly assume that the color-disorder in accommodative asthenopia is caused by circulatory anomalies, producing hyperæmia of the optic nerve and consequent nutritive disturbance of the nerve fibres; for the color-disturbance sets in with the hyperæmia and disappears with it, and there are no inflammatory, much less degenerative, processes present. We may, therefore, conclude that also in neuritis nutritive disturbance will produce color-disorder, without the presence of degenerative or atrophic processes.

Comparing the visual fields in neuritis with those in

[1] *Klin. Mon.*, 1873, p. 402.

atrophy, the chief difference seems to be in the outer (white-) limit, which, in atrophy, is never normal, but gradually progressing, mostly by irregular indentations, whereas in neuritis it is, if at all, only slightly and concentrically narrowed, and soon turns normal again. No fundamental differences seem to exist in the kind of the chromatic disturbances: they always result from defective nutrition. If the causes are dilatory as in atrophy, color-blindness and amaurosis must be the consequence; if they are transient, complete or partial recovery will follow.

Color-disorder being, as we have seen, completely removed after having existed for months, its duration cannot, by itself, indicate atrophy; nor can the kind of the color-disorder indicate it, for the succession in which the single colors disappear and reappear is the same in benign neuritis as in atrophy. The alterations in the limit for yellow may, perhaps, prove a distinctive feature, for, according to our experience, it showed marked contractions in most cases of neuritis, and often faded away simultaneously with green, whereas, in many cases of progressive atrophy, the perception of yellow is preserved as long as that of blue.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THE ANTISEPTIC ACTION OF COCAINE, CORROSIVE SUBLIMATE, AND CHLORINE WATER UPON DACRYOCYSTITIC SECRETIONS TESTED BY INOCULATIONS OF THE CORNEA.

A CONTRIBUTION TO THE QUESTION OF DISINFECTION.

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Translated by A. Schapringer, M.D., New York.

IN the vast majority of cases of dacryocystoblennorrhœa the secretions of the sac have infectious properties, as has been proved by a series of inoculations of the corneæ of rabbits already published by me.[1] The inoculations produced intumescent infiltrations, and often purulent ulcers, with hypopyon and iritis.

I have made use of similar inoculations in order to test the disinfecting properties of a number of drugs, by first mixing them with the blennorrhoic secretion of the lachrymal sac, and then inoculating the cornea with this mixture. If disinfection had taken place, no purulent inflammation ensued. The severity of the inflammation following septic inoculation varies according to the quantity of matter introduced into the corneal wound, and the virulence of this matter, the virulence changing in different forms and stages of the disease. Occasionally the individual disposition of the animal experimented upon also seemed to exert some influence. After one has made a certain number of such experiments, it becomes an easy matter to decide in any

[1] Virchow's *Archiv f. path. Anat.*, Bd. lxx., 1877; Zehender's *Klin. Monatsbl. f. Augenheilk.*, April, 1877, and July, 1880.

one case whether the reaction is of a septic or an aseptic nature.

In regard to the question of the prevention of infectious purulent keratitis, these experimental inoculations are at least of the same importance as those experiments in which cultures of microphytes are treated with disinfecting substances in order to ascertain whether the microphytes will thereby be deprived of viability or not. Experiments of the latter description, and of a different and more general scope, have been made several years ago by Buchholtz, Wernich, and especially by Koch and his pupils.

Lately (1883), Sattler published the results of experiments in which he tested the viability in culture-gelatine of dacryocystitic micrococci and jequirity bacilli dried on silk threads and treated with antiseptic substances. He paid especial attention to the length of time required by the antiseptic substances to exert their influence. These experiments are open to the objection that nothing definite is known as yet about the clinical significance of these microphytes in the etiology of purulent inflammations of the cornea. Sattler himself observes that the pus of dacryocystoblennorrhœa "contains several species of micrococci, and we do not know which is virulent and which is not."

In my paper quoted above, and written before the method of staining the schizomycetes had been introduced, I described "single micrococci, micrococci in chains of two, three, or more links, and microbacteria" found in the pus of dacryocystoblennorrhœa. Subsequently I made renewed investigations in conjunction with Professor Schottelius using gentiana and Hoffman violet for staining purposes. In this way I discovered numerous bacilli arranged in small stellate groups, and presenting two different shapes. One form is small, stout, and composed of two roundish portions. Whether these are really diplococci, as is supposed by Widmack,[1] who pictured them in his drawings, I could not decide. The other form, not so numerous as the first, is longer and more slender, and is certainly a bacillus. It strikingly

[1] "Bakteriologiska studier öfver dacryocystit och ulcus serpens corneæ." Reprinted from *Nord. med. arkiv.*, Bd. xvi., No. 25.

resembles the tubercle bacillus, but is somewhat shorter, and does not retain the first aniline dye if a second is employed, as does the latter.

Widmack isolated the micrococci and diplococci which he found in the secretions under discussion, by cultivating them in blood serum from the ox, and then inoculated them into the cornea. Almost always keratitis ulcerosa and hypopyon followed. After I had informed Mr. Widmack of the results of my investigations, he also succeeded in finding the bacilli.

In spite of these interesting experiments, the question as to the pathogenic bacteria of dacryocystoblennorrhœa must still be considered an open one. The inferences drawn from the results of the action of antiseptic substances upon bacteria-cultures as to the efficiency of these substances in preventing purulent keratitis are only probable. Granted even that the micro-organisms mentioned above are the real source of infection, it must be borne in mind that the medium containing them is of great consequence. The investigations of Fischer and Proskauer[1] on disinfection, by means of chlorine and bromine, have shown that the degree of humidity of the micro-organisms is of great importance. Comparatively thick layers of micro-organisms could be rapidly and surely destroyed by chlorine, provided they were moist by nature, or had been moistened by suitable treatment.

In his investigations, Sattler employed only dried cultures of bacteria, and his conclusions therefore cannot be made to apply to the liquid secretions of the lachrymal sac, or to other organisms contained in the moisture of the conjunctival cul-de-sac. Fischer and Proskauer, on the contrary, were right in using tuberculous sputum for their experiments, and not the isolated tubercle bacillus, notwithstanding the fact that in this case the infectious character of the bacillus is well established. They lay special stress upon the necessity of attacking the micro-organisms in the same medium in which they naturally occur.

[1] Ueber die Desinfection mit Chlor. und Brom. Mittheilungen aus dem K. Gesundheitsamt, Bd. ii., p. 228, 1884.

For this reason I attribute special importance in the question of disinfection to experiments made with dacryocystitic pus itself. It is a well-established fact, and one that can be often verified by clinical observation that the secretion of dacryocystoblennorrhœa is capable of infecting corneal wounds, but it will be seriously doubted whether *dried* dacryocystitic micrococci or jequirity-bacilli ever cause such a complication unless they are inoculated for experimental purposes. The supposition that disinfectants will affect the dry spores suspended in the air, which are said to cause suppuration in the cornea after operations, in the same way as they affect these cultures, may be true, but it wants corroboration, especially since investigations with such recognized pathogenic micro-organisms as those of anthrax, tuberculosis, and erysipelas have proved a great difference to exist between the behavior of cultures and of dry spores towards disinfectants.

Experiments conducted with the pus of dacryocystoblennorrhœa, therefore, should be recognized as of scientific value, for the present at least, as long as they afford information about a substance practically known as a source of infection.

Since cocaine has come into such general use in the operations upon the eye, I have deemed it suitable to include it among the substances experimented with, in order to ascertain if it had any antiseptic qualities, and especially the salicylate of cocaine. Besides this I experimented with corrosive sublimate in solution, and repeated the experiments with chlorine water, which I have already published. I made, all in all, forty-eight inoculations. The method pursued was the same as before, with the difference, however, that I made a note of the length of time the secretions remained in contact with the disinfecting substances. The secretions were thoroughly stirred, and mixed with the disinfecting fluids.

The muriate, as well as the salicylate, of cocaine (Merck's) were used in solutions of four per cent. There was no perceptible difference in the action of the two preparations. The secretions coagulated in them into small balls. Their

infectious nature remained unimpaired after lying in the cocaine solution for from one to three minutes. After ten minutes they still produced well-marked septic inflammation.

EXPERIMENTS.—*Jan.* 10, 1885.—Small gray rabbit. *Right* cornea inoculated with muco-purulent matter from a profusely secreting case of dacryocystoblennorrhœa, which had been kept in a solution of muriate of cocaine for ten minutes, and had been thoroughly mixed.

Jan. 11th.—Grayish-white infiltration at the point of inoculation, with a shred of mucus adhering to it. Chemosis of the conjunctiva. Iris discolored. Pupil contracted.

Jan. 12th.—Gray cheesy infiltration, slightly intumescent. Well-marked conjunctivitis with œdema. Slight yellowish-gray opacity of lower anterior quadrant of cornea. Pupil contracted. Decidedly septic inflammation.

The infectious character of the secretions seemed to be mitigated somewhat by treatment of ten minutes' duration. That this was not the result of the action of the water merely was proved by experiments in which pus treated with distilled water and with cocaine solution were compared.

Jan. 26, 1885.—Yellowish rabbit. *Right* cornea inoculated with dacryocystitic pus having lain in distilled water for from eight to nine minutes. *Left* cornea inoculated with same pus having lain in cocaine solution for from seven to eight minutes.

Jan. 27th.—*Right* eye: Thick cheesy infiltration of the cornea surrounded by diffuse opacity; pupil contracted; iritis. *Left* eye: Intumescent white corneal infiltration not so large as on right side; pupil medium-sized; slight conjunctivitis.

Jan. 29th.—*Right* eye: Cheesy whitish infiltration and diffuse slight opacity of cornea; pupil contracted. *Left* eye: Yellowish infiltration and slight opacity of cornea; inflammation somewhat less than on right side.

It follows from these experiments that cocaine solutions of the strength of four per cent. somewhat mitigate the virulent character of blennorrhoic secretions of the sac, but they do not act as disinfectants in the strict sense of the term.

I have made similar experiments with a solution of corrosive sublimate of the strength of 1 to 5,000, which is now generally used as a disinfectant in ophthalmic surgery. Immersion of three minutes' duration was usually not sufficient for the complete destruction of the infectious properties of the matter, from five to ten minutes being required. The following are examples of experiments performed with highly infectious material:

I. *Feb.* 9, 1885.—Large gray rabbit. *Left* eye inoculated with yellowish dacryocystitic pus which had lain in sublimate solution for two or three minutes. *Right* eye inoculated with pus of the same source which had been treated with a four-per-cent. solution of salicylate of cocaine for four or five minutes.

Feb. 10*th.*—*Left* eye: Yellowish, purulent, intumescent infiltration surrounded by a hazy zone; pupil contracted; partial œdema of conjunctiva; muco-pus in conjunctival sac. *Right* eye: Cheesy infiltration, swollen especially at the margin; diffuse, moderate opacity of the cornea; pupil contracted; œdema of conjunctiva; conjunctival secretion increased. (No marked difference from left eye.)

Feb. 11*th.*—About the same as on the day previous. The infiltration of the left cornea somewhat less then that of the right.

II. *Feb.* 9, 1885.—Large gray rabbit. *Left* cornea inoculated with the same material as in I., but after having been immersed in sublimate solution for six minutes. *Right* cornea inoculated with the same matter treated with a four-per-cent. solution of cocaine salicylate for the space of eight minutes.

Feb. 10*th.*—*Left* eye: Slight abrasion of the cornea at the point of inoculation, with some haziness at the margin only; pupil of medium size; no conjunctivitis. (No infection.) *Right* eye: Yellowish, swollen, cheesy-looking infiltration of cornea, surrounded by diffuse opacity; iritis; marked conjunctivitis and œdema.

Feb. 11*th.*—*Left* eye almost entirely free from inflammation. *Right* eye the same as yesterday.

My previous experiments had already demonstrated the remarkable disinfecting power of chlorine water, and I have recommended it as the most practical disinfectant for eye-surgery. Additional experiments have proved that it surpasses the sublimate solution treated of above in quickness

of action. This coincides with the results obtained by Sattler, in his experiments with cultures of microphytes as well as those obtained by Fischer and Proskauer, from their diligent and carefully conducted researches. "The micro-organisms are rapidly and surely disinfected by chlorine, even in comparatively thick layers, if they are moist by nature or have been moistened by adequate treatment. Disinfection is completed most rapidly if chlorine suspended in an atmosphere saturated with moisture is made to act upon moist objects."

Even spores of the bacillus of anthrax, which are endowed with an exceptional power of resistance, become disinfected within three hours if treated with very moist air containing 0.32 to 0.18 per cent. of its volume of chlorine gas. The *aqua chlori* of the German pharmacopœia ought to contain 0.4 per cent. of chlorine.[1] The apothecaries usually keep it in dark bottles in the cellar. In order to neutralize the inevitable loss by evaporation, it is usually made to contain more than the standard quantity of chlorine gas at first. *This chlorine water is well borne by the eye, and therefore is superior to sublimate solution*, which even in the low strength of 1 to 5,000 will in some cases cause conjunctivitis. If this solution be used to irrigate the eye for some time, as, for instance, during an operation, the result in almost every case will be increased conjunctival secretion. Therefore, since chlorine water, as the experiments have shown, surpasses the sublimate solution of the customary strength in disinfecting power, it must be regarded as the best disinfecting substance for the eye. I now use it at every operation, first washing the lids with it and then irrigating the globe and the conjunctival sac. If the instruments and the hands of the operator are clean and the conjunctival sac is irrigated once more after the completion of the operation, every thing will have been done to secure aseptic healing. Affections of the tear-passages must of course be cured or made innocuous beforehand.

There is one drawback to the employment of chlorine water, viz., the fact that chlorine gas has a tendency to

[1] The same as that of the U. S. Pharmacopœia.—*Translator.*

combine with hydrogen and form hydrochloric acid. But if the preparation is kept in dark bottles and in a cool place, the formation of acid is so insignificant that practically it can be disregarded altogether. I had some chlorine water analyzed which had been standing in my Klinik for four weeks, and from which small portions had been taken from time to time. It still contained 0.23 per cent. of free chlorine and a smaller quantity of hydrochloric acid. This saturation has still sufficient disinfecting power. If *aqua chlori* be procured fresh every week, and its strength tested once in a while by smelling of it, it will be found the mildest and at the same time the most efficient disinfectant for practical use in ophthalmic surgery.

THE SECOND SERIES OF ONE HUNDRED CASES OF EYE DISEASE TREATED WITH THE GALVANO-CAUTERY.

By Dr. A. NIEDEN, Bochum, Prussia.

Translated by Dr. J. B. McMahon, New York.

AFTER an interval of scarcely half a year, I present the report of the second series of one hundred cases of corneal affections treated with the galvano-cautery; a proof at once that I have had full opportunity to test thoroughly the method, its value, and its range of applicability, and that it has again done me such excellent service as to force me to its further recommendation.

The numerous communications of which I am in receipt show that the method has obtained an extended trial in other hands than my own, and has had its importance generally recognized. The unfavorable judgment expressed by Michel in his text-book[1] can scarcely rest upon a sufficiently extensive personal experience.

The statement there made with regard to the "want of certainty in judging of the depth of action of the galvano-cautery," I would simply reverse. In this respect, I have already[2] taken occasion to comment upon the special advantages of the method of which a short experience will convince any one who has at his command the proper weapon, a suitable galvano-cautery.

A second objection is offered—the possibility of the reappearance of parasitic elements in the burnt tissue and

[1] Michel: "Text-Book of Eye Diseases," p. 276.

[2] Nieden: *Centralbl. f. Augenheilk.*, Bd. viii., p. 375.

their further growth. No other answer is needed to this than the fact now universally admitted, that the development of spores becomes impossible on sterilized soil, and as such we have every reason to regard an ulcer treated with the galvano-cautery.

We must, of course, assume first that the slight operation has been properly and thoroughly done, as a partial destruction of the parasitic elements occupying the ulcer will certainly not prevent the development of those which have escaped.

Experience here, too, proves the best teacher, as is shown by the present second series of cases; for I am now rarely obliged to resort to the use of the heated loop a second or third time in order to put a stop to the progress of the disease.

The reason is this, I cauterize more thoroughly at the first sitting, and am now better able to judge how much of the tissue is infected and must be sacrificed so as to leave untouched no morbific elements which would require in two days a repetition of the operation. Such repeated operations are necessitated not by the intrusion of parasites into the burnt portion of the tissues, but by the development of such as had previously existed in the neighboring tissues and had escaped destruction, as is shown in the case of any rodent ulcer of the cornea.

The introduction of cocaine has had a not insignificant influence on the success of the operation, by facilitating its performance and admitting of a more delicate manipulation as in penetrating into the different individual tissue-layers. To this influence I have already[1] called attention, as have also A. von Eversbusch[2] and Schweigger.[3]

The introduction of local anæsthesia has done away with the unpleasant features which were connected with the use of the galvano-cautery, such as the cauterization of a stripe of healthy corneal epithelium from an inadvertent movement of the patient on the approach of the heated loop or a

[1] *Centralbl. f. Augenheilk.*, Bd. viii., page 374.
[2] *Aerztl. Intelligenzbl.*, Bavaria, 1885, p. 6.
[3] *Berliner klin. Wochenschr.*, 1885, p. 49.

sudden turn of the globe under the fixing fingers on the application of the heat; again it was sometimes necessary to suspend the operation too soon.

A few minutes after the application of two drops of a three-per-cent. solution, there is a spontaneous widening of the palpebral fissure, which materially assists in the manual fixation of the lids; the anæsthesia of the corneal layers is so complete that neither the approach of the red-hot loop, nor its repeated application (which is accompanied with considerable hissing), nor the penetration of the entire depth of the corneal substance, causes any painful sensation.

Almost all patients, including children, bear the operation quietly, and I generally do it under the pretence of being obliged to remove a foreign body clinging to the eye.

What I consider the chief advantage of cocaine in this connection, is this, that it enables us to proceed with the destruction of the tissues slowly and layer after layer, pressing the point of the instrument against the diseased surface momentarily, and inspecting the parts rapidly before repeating the process.

Instead of destroying, as was formerly done, as much tissue as possible by a single firm application of the point, I touch lightly and rapidly one or more times the whole surface of the ulcer. After this surface cauterization, I quickly note the color and form of the deeper structures, by lateral illumination, if possible, and if it seem necessary, now carry the incandescent loop through them, even as far as Descemet's membrane.

Especially in the characteristic form of serpent ulcer is it advisable after the cauterization of the upper layers to employ the process over the entire extent of the infected border-zone. In rodent ulcers also, the point of the instrument must be used to destroy deeply the separate, visible infiltrations lying near the edge of the ulcer.

At times it becomes necessary to penetrate the floor of the ulcer on account of the threatened perforation of the thinned wall, consisting only of Descemet's membrane, or the existence of a considerable, very fluid hypopyon, the evacuation of which would promise a more rapid cure, or the develop-

ment of increased intra-ocular pressure and diminished osmotic power of the cornea. Under these circumstances, the point of the loop heated to a brighter glow than usual is pressed quickly and firmly into the ulcer, the instrument being carefully balanced on its fulcrum so as to allow of the prompt withdrawal of the point as soon as the aqueous shoots in a small stream through the perforation; or, if the floor of the ulcer consists only of the tender Descemet's membrane, the flat surface of the loop is applied tangentially to the part, and so all danger of injuring the deeper parts is absolutely avoided.

In two cases of infiltration, resulting from traumatism, with infection and involving the whole depth of the corneal tissue, where it appeared necessary to destroy all the infected tissue at a single sitting without injuring the surrounding healthy tissue by the formation of a crater-shaped opening, I was able by a firm and rapid pressure of the point to pierce the whole thickness of the cornea, the exit of the aqueous humor showing that the anterior chamber had been entered, and to withdraw it immediately, whilst the perforation at the same time closed, and so the greater part of the aqueous was retained.

This method of opening the anterior chamber, as demanding a certain steadiness of hand and immobility of the eyeball, although in itself an easy procedure, could not well be done without the use of cocaine; indeed, without it I would not expose patients to the risk of thus injuring the deeper parts, but would resort to the destruction of the tissue in layers, and finally enter the anterior chamber by the usual method already described, and which I consider the proper one in the majority of cases.

Although the pain is not felt at the time on account of the local anæsthesia, and the patient is scarcely aware that an operation has been done on his eyes, after fifteen to twenty minutes a painful sensation (and, it seems to me, in a more marked degree) is noticed, which, as a rule, disappears rapidly and for good. It is described as like a burning in the eye, the presence of a foreign body or ciliary and supra-orbital neuralgias.

As a great advantage of the cocaine, I would finally allude to its cumulative influence in causing the more rapid dilatation of the pupil after previous atropinization, in most cases of so-called hypopyon keratitis which call for the use of the galvano-cautery.

The affections were of about the same character as those already described in my first publication on the subject. Most cases were infected forms of ulcer, including the first stage of the disease, infiltrations of the corneal tissue, in which a destruction of the infected parts—in other words, a sterilization of the site of the ulcer—is the first condition of the cure. Eighty-five cases were corneal ulcers with marked tendency to involve the neighboring parts. Of these fourteen belonged to the class of serpent ulcers with the characteristic, crescentic, mostly swollen ring of infiltration. In sixty-three cases (seventy-five per cent.) pus in greater or less quantity was to be found in the anterior chamber; in twenty the process had not yet advanced so far.

Here, again, it is plain that the expression "hypopyon ulcer" does not describe the characteristic quality of any kind of ulcer. To consider the presence or absence of hypopyon as determining the character, is as if a division of ulcers were based upon their position in the cornea.

It cannot be denied that individual systemic conditions have a decided influence in this regard, as a much greater tendency to exudation and suppuration may exist in one patient than in another.

The existence of hypopyon is of no greater importance as an indication for treatment. While the character of the floor of the ulcer, its dirty gray color, its irregular surface as seen through a lens, the diffuse or localized infiltrations developing in the neighboring tissues, the marked symptoms of irritation, and possibly, also, the genesis of the process, show its infectious nature, the treatment has but a single aim—to separate, as rapidly and thoroughly as possible, the parts already involved from the yet healthy tissues, and so avert the extension of the infection. The application of the galvano-caustic, incandescent loop accomplishes this in the simplest way.

The healthy tissue is thus allowed to start the reactive processes of complete separation of the dead tissue and later restoration of the destroyed parts.

Sämisch's incision was the first advance in this kind of ocular therapeutics, so closely allied to the corresponding measures in general surgical practice; the galvano-cautery acts on the same principle, and, in my view, carries it out more fully.

The opening of the anterior chamber by means of incision was resorted to but twice in the last one hundred cases; in these the hypopyon was so extensive, and the coagulated contents so firm, that their disintegration and absorption would have been a process of too long duration, far exceeding the time required for the healing of the corneal ulcer.

An early evacuation of the anterior chamber by operation is not necessary, as experience shows that, after the sterilization and clearing up of the surface of the ulcer, the absorption of the pus proceeds with astonishing rapidity.

More than half the second series of corneal affections treated with the galvano-cautery (fifty-eight cases) were the result of traumatism; the ulcers produced by cold foreign bodies (*i. e.*, those not heated to a glow) decidedly outnumber those corneal lesions caused by metal in a fluid or glowing condition.

These latter, especially particles of iron or steel struck with the hammer from white- or red-hot blocks of metal in forging, cause at first, it is true, a graver and more extensive injury of the affected part. But the foreign body is soon removed, the underlying so-called ring of rust, consisting really of oxide of iron and burnt tissue, separates, often in two or three layers, so that only the base of the injured spot remains, appearing as a brown pigmented spot with gray border. The parts involved show little tendency to suppuration or to further purulent infiltration of the neighboring parts. On the other hand, if left to itself, the brown pigmented spot disappears very slowly, and the process of repair is equally tedious, though moist, warm applications used for several days hasten it.

In order to expedite the cure, but not, as above explained,

to save the tissues from purulent disintegration, which, under these circumstances, is rarely to be feared, I have repeatedly used the galvano-caustic loop after the removal of the foreign body. The ring of burnt tissue, composed of one or more layers, and the pigmented underlying tissue, are completely removed by a single application of the cautery, leaving a clean surface behind.

The results in these cases, with reference to the extent and density of the macula, are so much better under my present mode of treatment, that I can recommend the galvano-cautery in these also, as far preferable to other means.

There the method claims attention, because the cure is more rapid and the termination more favorable.

As a not uninteresting contribution to the study of injuries of the eye, we may note the observation that lesions due to flying bits of boiler-incrustations, which are generally composed of nitrates, and which, forming a deposit on the inside of boilers, require to be chiselled off, lead, almost without exception, to the formation of the pernicious forms of corneal ulcer. I do not think that the chemical composition of the foreign body has all to do in those cases with the marked tendency to ulcerative destruction of the corneal tissue. We must take into consideration the fact that the workmen, immediately after the emptying of the boiler, must pursue their work in this overheated place, in a profuse perspiration, and so all the conditions favoring the development of infectious processes are present, even to the want of protection of the eyes from the sweat.

In my first series of observations, dacryocystoblennorrhœa showed as a complication in the relatively small number of six cases; in twelve cases of the second hundred, however, was noted the presence of infectious pus in the tear sac.

In this series, too, it is sufficiently proved that the starting point of the ulcerative process has generally been a traumatic lesion of the corneal epithelium, as a rule, of a trivial character.

It was also characteristic that both the cases of rodent ulcer were complicated with suppuration of the lachrymal

sac, and, further, that, in two other cases, in which, although this complication was absent, the tear duct was rendered impassable by lupous degeneration of the mucous membrane, pernicious ulcerative processes of the cornea with hypopyon called for the use of the cautery.

Although no lupous affection of the conjunctiva, or of the lachrymal sac could be demonstrated, it is fair to suppose the existence of an etiological connection between the lupous growth involving the lower part of the tear duct and the corneal disease, which presented all the characteristics of an infectious process. The success of the treatment was as well marked as in the other cases, the cure taking, however, about one third longer time. This same delay is noticed also in those ulcers occurring in scrofulous subjects, with deep, crater-shaped edges, and muco-fibrinous secretion, which generally extend through the entire thickness of the cornea and terminate in perforation. The use of the galvano-caustic methods here, too, causes a more rapid cleansing and separation of the diseased from the healthy parts. But it must be employed with more than ordinary caution, the loop being heated to a dull red only, on account of the diminished power of resistance in the tissues.

As we have to deal with the general cachectic condition of the patient, and a correspondingly unsound state of the parts adjoining the ulcer, the reaction is slow, the healing process not so active as in the case of an ulcer, pernicious, indeed, in itself, but arising as the result of an infectious virus in otherwise healthy corneal substance. In such cases we can not dispense with the simultaneous use of such therapeutic aids as moist heat, tonics, etc.

For the sake of experiment I employed the cautery in two cases which I might describe as a peculiar form of corneal sclerosis (sclerosirende keratitis). There is a peculiar development of hypertrophic strands of connective tissue which pass over the cornea, irregularly involve the entire thickness of the cornea in tortuosities, almost corresponding to those of the corneal lymphatic system, often project above the surrounding parts, are of milk-white color, and so offer a marked contrast to the transparent, healthy

corneal substance. There is increased vascularity only in the region of the limbus conjunctivæ; a few leashes of vessels follow some of the connective-tissue bands as far as the centre of the cornea.

The conjunctiva shows a certain degree of xerosis, but no trachomatous degeneration. Vision is correspondingly impaired. The patients complain of occasional severe attacks of ciliary neuralgia, which seems due to rheumatic influences.

I have seen the above-described affection three times in some 52,000 patients; the patients were miners and in each case but a single eye was affected. The disease has little in common with the picture of diffuse sclerosis of the cornea, and yet in its invasion and course the two are very similar.

As in these cases all treatment proved useless, I thought it possible, after the analogy of other observations, to limit to a considerable extent the opacity of the cornea by the galvano-caustic destruction of the connective-tissue formations, and so preserve the yet transparent parts of cornea with the result of improvement of the vision. Accordingly I used the heated loop to destroy some of the tortuous strands, in doing which I was obliged to penetrate to the inner layers of the cornea.

The manipulation is easily executed with complete preservation of the transparent tissue; yet I did not dare wander far from the nutrient border of the membrane toward the centre on account of the lowered nutritive power of the cornea.

My fears were justified. Although the diseased tissue could be destroyed without endangering the healthy portion of the cornea, the reaction processes of repair proved so interminably slow and the vascularization of the edge of the cornea showed only after so long a period of time, that I desisted from operative interference with the centre of the cornea, the part of most importance for optical purposes.

In general, it may be asserted that ulcerative processes of the cornea which are accompanied, in their healing, by the formation of vessels springing from the corneal margin, and which, as it were, need these vessels for their cure, do not

present the forms of purulent corneal infiltration or ulcer best suited for treatment with the galvano-cautery.

This holds true also for the forms of malignant phlyctenular keratitis which extend from the margin to the centre of the cornea, with a dense, broad leash of vessels, having at its apex a wide, grayish-yellow, elevated patch of infiltrated tissue. The condition is accompanied by ciliary neuralgia and violent irritation of the eye; it occurs mostly in patients of a scrofulous constitution and often progresses steadily in spite of all treatment.

By the destruction of the advancing infiltration, the galvano-cautery, in these cases, too, brings about a cessation of the ulcerative process, and so satisfies the first condition for the cure. But the completion of the reparative process is slow, the separation of the burnt tissue requires considerable time, the restoration of the loss of substance is not so perfect as we have occasion to observe in the worst forms of ulcers arising directly from infection.

The case is otherwise in the forms of pustular conjunctivitis, which, as is well known, occupy broad patches of the scleral conjunctiva near the corneal margin. They have generally destroyed to a greater or less extent the epithelial layer of the conjunctiva, and are covered with necrotic, light yellow, disintegrated masses of tissue or, in their later stages, with fungous granulations, easily destroyed on pressure. They offer considerable resistance to the irritant methods of treatment, whether with the red precipitate ointment, calomel insufflations, or the like. They show a decided tendency to involve the adjoining corneal tissue in an ulcerative process, confined to the margin, which can be regarded as a trophic disturbance of these parts, and for this reason demands the most energetic interference to terminate the primary disease. This is best accomplished with the galvano-caustic loop by furrowing the entire surface of the ulcer and by piercing the separate granulation masses. In a few days the floor of the pustule is freed from the necrotic masses attached to it, the conjunctival epithelium rapidly spreads over the affected parts, from the edges, and the normal nutrition of the adjoining corneal tissue again proceeds unimpaired.

If a marginal ulcer has already formed, it is treated with the galvano-cautery in the manner already described. I prefer to make a small perforation early in the progress of the disease rather than wait for a spontaneous opening, and so obtain a more rapid and satisfactory cure with only a trifling irregularity of the pupil at the point of perforation.

As most of these forms of disease occur in scrofulous patients, the local treatment must evidently be supplemented as much as possible, with tonic treatment directed to the general systemic condition of the patient. My observations include five such in the last series of one hundred cases.

In the treatment of acute trachoma of the conjunctiva, I have adopted the usual method for one eye of each patient, and for the other the destruction of the separate visible trachoma granules by the galvano-cautery. From the nature of the experiment I have not yet been able to conclude my observations on the value and possible advantages of the new method. The results I hope to be able to communicate later.

In destroying small tumors of the lids, especially teleangiectasia of the skin, I decidedly prefer the use of electrolysis, or the Paquelin cautery, as the quantity of blood in the tissues by cooling the loop of the galvano-cautery too fast prevents an extensive application.

I believe that in these observations I have covered almost all that district of eye diseases in which the employment of the galvano-cautery seems appropriate. It remains now to sum up the results of the treatment. In the introduction to this article, I stated that I had nothing to retract of the favorable opinions expressed in my first article on this subject, but, on the contrary, had obtained equally good results in my further experience with the second series, provided the method was employed in suitable cases.

This second series presented to me rather a field for investigating to what extent the method possessed value, and whether success could be obtained by the galvano-cautery in obstinate affections defying all other therapeutic means. In spite of this, I have not yet to report a single case of loss of the eye from anterior or total phthisis.

Of the 85 more or less severe corneal affections, including abscesses, superficial and deep ulcers, with or without hypopyon, serpent and rodent (3) ulcers, 75 (= 88.2 %), were cured, leaving an opacity (which we commonly designate as macula), but which has the advantages of limited extent, and of greater transparency over those which follow losses of substance that heal through suppuration.

In ten cases extensive opacities, the so-called leucomata, remained; in two of these a supplementary iridectomy inward was necessary, on account of their central position and their size. In ninety-three cases a single thorough application of the incandescent loop sufficed to terminate the destructive process; in four cases a second application was rendered necessary by the continued extension of the zone of infiltration; in three cases the procedure had to be repeated four to six times, often at intervals of some days, on account of oft-recurring foci of propagation before the desired sterilization was attained.

Cocaine was used in all cases treated during the last half year, but I did not find it equally efficacious in every individual,—a fact which has already received attention in several quarters.

In conclusion, I take the liberty to make this practical suggestion: Do not use too many elements to arm the instrument—certainly not a galvano-caustic battery. In addition to the danger of destroying the loop by melting, we must remember that there is no absolute need of radiation in white heat; indeed, this is a disadvantage in doing delicate work, on account of the marked dazzling. A single powerful element, whose plates can be immersed into the liquid to a greater or less extent, according to the freshness of the liquid, or the effect desired, is fully sufficient to bring the platinum wire to a red heat. In cautious operations on the deep parts, I have the loop heated to a dull red, and so attain my end more slowly but more surely.

Such, in short, are the results of my observations. I hope they will receive further confirmation by the practical employment of the method in the hands of my colleagues.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY DURING THE FIRST QUARTER OF THE YEAR 1885.

By H. MAGNUS, Breslau; C. HORSTMANN, Berlin; and A. NIEDEN, Bochum.

WITH THE COÖPERATION OF

C. E. Fitzgerald, Dublin; E. Marckwort, Antwerp; P. v. Mittelstädt, Brussels; Dantone, Rome; Hirschmann, Charkow; S. M. Burnett, Washington; Schjötz and Ole Bull, Christiania, etc.

Translated by Dr. F. E. D'Oench, New York.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

By H. MAGNUS, M.D.

a.—TEXT-BOOKS, MONOGRAPHS, TREATISES ON GENERAL, BIBLIOGRAPHICAL, AND HISTORICAL SUBJECTS.

1. Bunge. The new ophthalmic clinic at the University of Halle, a. d. S. *Klin. Monatsbl. f. Augenhk.*, vol. xxiii., p. 18.

2. Fuchs. The causes and the prevention of blindness. Prize Essay. Wiesbaden, 1885.

3. Gelpi y Jafre. Tratado iconográfico de las enfermades externas del órgano de la visión. Barcelona, 1885. 20 plates with 108 chromo-lithographs. Price 100 Mk.

4. Schmidt-Rimpler. Ophthalmology and ophthalmoscopy, for physicians and students. Wreden's collection of short medical text-books, vol. x. Braunschweig, 1885, 8vo, 628 pp. With 168 wood-cuts and a colored plate. 14 Mk., 50 pp.

The new ophthalmic clinic at Halle, a. d. S. (1), was opened April 1st; for the present it can accommodate forty-five patients.

All the rooms are heated from a central station. The heat generated there is also used for ventilating all the buildings connected with the clinic: the hot air rising through iron chimneys enclosed in a tower 40 *m.* high and 5 *m.* wide draws the impure air from every room of all the buildings, through a system of channels communicating with them.

FUCHS (2) has made no investigations of his own, but has drawn his conclusions from a comparison of those of other authors especially those of the Reviewer. He has evidently devoted most attention to the prevention of blindness, and judged from this point of view the book is an excellent one. Those chapters are particularly good which treat of blindness caused by diseases which, to a great extent, are preventable—for instance, trachoma and blennorrhœa. The geography of blindness, like all other chapters which are not of much hygienic importance, is treated very briefly. The prize having been awarded by the Society for the Prevention of Blindness, a society whose aims are essentially practical, their choice must be regarded as eminently proper.

GELPI Y JAFRE (3) has attempted to illustrate the external affections of the eye on a great scale, the first attempt since the time of Desmours, Ammon, and Rüte. The atlas shows evidence of marked scientific and artistic ability, but it is doubtful whether its practical value is equivalent to the trouble and expense of preparing it.

SCHMIDT-RIMPLER'S (4) book has been very well received. Its language is concise, the description of diseases lucid and based on observations of his own. The book is well adapted both for self-instruction and academic teaching, and will certainly meet with general approval.

b.—STATISTICAL PAPERS.

5. V. HÄRING. Report on twenty-five years of the private Ophthalmic Institute at Ludwigsburg. Stuttgart, 1885.

6. MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY. Fifty-ninth annual report for the year 1884. Boston, 1885.

7. NEW YORK OPHTHALMIC AND AURAL INSTITUTE. Fifteenth report (for nine months). New York, 1884.

8. SCHREIBER. Second annual report from Jan. 1 to Dec. 31, 1884. Magdeburg, 1885.

9. OSTROWSKY. Short report on 147 operations on the eye. *Wjestnik ophth.*, March, April, 1885. The operations were per-

formed at Tobolsk (Siberia). 46 extractions of senile cataracts; among these in 3 cases panophthalmitis; in 1, iritis; 15 iridectomies; 74 entropium operations (2 according to Snellen, the remainder according to Crampton); 1 extirpation of sarcoma of the orbit; 1 echinococcus of the orbit.

10. WICHERKIEWICZ. Seventh annual report for the year 1884 of the Ophthalmic Institute for the Poor at Posen. Posen, 1885.

11. WIESBADEN. Twenty-ninth annual report for 1884 of the Ophthalmic Institute for the Poor at Wiesbaden. Wiesbaden, 1885.

HÄRING (5) treated 24,899 patients; 820 extractions were performed, 357 of them according to Graefe, 32 according to Jacobson, 13 according to Mooren, 3 according to Beer, 2 according to Jaeger, 3 according to Wecker; 157 flap-extractions, the last in 1866–67. Whole number of operations performed 2,019. The loss in extractions according to Graefe amounted to 9.5 per cent. during the 25 years.

In BOSTON (6) 8,097 patients were treated; 95 extractions according to Graefe are reported in detail, 3 total losses, 3 moderate results, 8 cases which can be improved by another operation; 8 cases could not read.

At the NEW YORK OPHTHALMIC AND AURAL INSTITUTE (7) 4,695 new eye-patients were treated and 367 operations performed; among these 36 extractions according to Graefe, 31 good, 4 moderate results, 1 failure.

SCHREIBER (8) treated 1,571 patients. The lachrymal sac was extirpated in 12 cases; exenteration of the globe was performed in 3 cases.

WICHERKIEWICZ (10) treated 3,369 patients; 323 operations, among them 36 extractions of senile cataract according to Graefe, 35 with good, one with moderate result; 3 successful extractions of cataract within the capsule; 5 cases of detachment of the retina were operated, 3 of which were successful, 2 moderately so, and 1 a failure.

In WIESBADEN (11) 2,119 patients were treated, 435 operations; 26 senile cataracts were extracted within the capsule, 24 with good, 2 with moderate result.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPEUTICS.

a.—GENERAL PATHOLOGY AND DIAGNOSIS.

12. ARLT. Development of congenital microphthalmus and anophthalmus. *Anzeiger der K. K. Gesellsch. d. Aerzte in Wien*, Feb. 12, 1885.

13. GAYET et MASSON. Essai sur l'atrophie du globe oculaire, *Clinique ophth. de la Faculté de Lyon. Arch. d'ophth.*, vol. v., 2. March, April, 1885.

14. MASSE. Étude sur la transplantation des tissus dans l'organisme. *Gaz. des sci. med. de Bordeaux*, 1884, p. 608.

15. TREITEL. On central positive scotoma and the cause of the disturbance of vision in affections of the retina. *Arch. f. Ophth.*, vol. xxxi., 1.

ARLT (12) shows that the cystoid formations found on the floor of the orbit in exophthalmus are due to dilatations of the lower wall of the globe produced by the intra-ocular pressure, the walls of the globe having become less resistant; they are not produced by traction from without, nor are they cysts external to the globe. These dilatations develop when the fœtal cleft either does not close at all or only very late, and coloboma of the iris and choroid, microphthalmus and anophthalmus, are the result.

MASSE (14) introduced bits of skin, conjunctiva, and cornea into the anterior chamber, which in some cases were absorbed, while in others they gave rise to genuine neoplasms. The implantation of hairs succeeded only when they were still surrounded by a portion of the epidermoid sheath. v. MITTELSTÄDT.

According to TREITEL (15) the essential difference between affections of the optic nerve and those of the retina does not consist in the loss of the color-sense, as this is common to both, but in the manner in which this loss develops. The positive scotoma is an entoptic phenomenon; the patients see the shadow of the darkened retina. The anomalies of the color-sense in the positive scotoma can be explained as the result of the shadow which covers the cones of the diseased retina. The proper color of the affected retina, besides the shadow cast, has a very essential influence upon the development of anomalies of the color-sense in positive scotoma. In affections of the optic nerve, the anomaly of the color-sense is due to decreased excitability of the fibres of the optic nerve.

b.—GENERAL THERAPEUTICS.

16. BAUDRY. De l'anesthésié générale en chirurgie oculaire. *Soc. franç. d'ophth.*, Jan. 27, 1885.

17. DUJARDIN. De l'exentération du globe oculaire. *Rev. clin. d'ocul.*, 1885, No. 1.

18. FISKE. Exenteratio sive evisceratio bulbi. *Amer. Jour. of Ophth.*, vol. ii., 1.

19. HIRSCHBERG. The electro-magnet in ophthalmology. Leipzig, 1885.

20. PANAS. Des applications de la méthode antiseptique en chirurgie. *Acad. de méd.*, March 24, 1885. *Semaine méd.*, No. 12.

21. PURTSCHER. A proposition in regard to the correction with glasses of certain anomalies of curvature of the cornea. *Arch. f. Augenhk.*, vol. xv., 1, p. 68.

BAUDRY (16) discusses general anæsthesia in operations upon the eye. He chloroformed a healthy girl two years old, who died in convulsions fifteen hours after the operation; he seeks the cause of death in an irritation of the nerve-centres and meninges produced by the chloroform. Baudry has found, in the literature of the subject published since 1849, forty-seven cases, in which the narcosis has resulted fatally. Anæsthetics are especially dangerous to tubercular children, or those with cerebral congestion, to persons suffering from nervous diseases, to excitable, timid individuals, and to persons with an irregular action of the heart. MARCHWORT.

HIRSCHBERG (19) first gives a historical review of the use of the magnet in removing foreign bodies. He then describes in detail thirty-three operations performed by himself, and concludes with a review of all the cases thus far published. See review in last number, p. 426.

PANAS (20) discards the spray, and recommends sublimate 1:10,000, or biniodide of mercury, 1:25,000, as the best antiseptics. He applies rags moistened with one of these solutions, or covered with a salve of similar composition, and then borated or carbolated cotton. V. MITTELSTÄDT.

III.—INSTRUMENTS AND REMEDIES.

a.—INSTRUMENTS AND TECHNICAL CONTRIVANCES.

22. ARMAIGNAC. Blépharostat à détente instantanée. *Rev. clin. d'ocul.*, No. 11, p. 268.

23. FERRI. La perimetria ed i perimetri registratori. *Ann. di ottalm.*, vol. xiv., 1.

24. GILLET DE GRANDMONT. De la necessité d'une numération commmune en périoptométrie. *Rec. d'ophth.*, March 1885.

25. LANDOLT. Notre blépharostat perfectionné. *Arch. d'ophth.*, vol. v., 1, Jan., Feb., 1885.

26. MAKLAKOW. Ophthalmotonometer. Sowsememoje obosren. 1885, 1. *Wratsch*, No. 7. *Arch. d'ophth.*, vol. v., 2, March, April, 1885.

FERRI (23) discusses the different self-registering perimeters, and describes one constructed by himself. DANTONE.

GILLET DE GRANDMONT (24) advocates the use of a single method of representing the field of vision which would be universally accepted, and describes his mode of expressing it by a single number, the different digits of which correspond to the angles of the different meridians. MARCKWORT.

LANDOLT (25) has replaced the screw of his speculum—described in the Comte rendu de la clinique du Dr. Landolt pour l'année, 1878—with a toothed bar connecting the branches near the spring. The speculum is opened or closed by pressing on one or the other side respectively of a little lever attached to the lower branch. The position of the hooks holding the edges of the lids has also been changed in such a manner that they do not touch when the instrument is closed. It can be inserted and removed very quickly, without pressing upon the globe or coming in contact with the wound.

MAKLAKOW (26) has constructed an instrument consisting of a metallic cylinder with a glass plate 10 *mm.* in diameter at both ends. The cylinder can be suspended by a probe or thread drawn through a transverse slit extending almost through its entire length. The cylinder weighs 10 grms. When it rests with its full weight upon the centre of the cornea (of a cocainized eye), the diameter of the flattened portion of the cornea will be the smaller, the harder the globe. Maklakow covers the glass plates with a thin layer of gentian blue in glycerine, and thus receives on them an impression of the flattened cornea, which he transfers to paper. The diameter of the flattened portion of cornea varied in his investigations (of which he performed 765) between 3.3 *mm.* (glaucoma) and 10.5 *mm.* (iridocyclitis post febrilis). The normal cornea is flattened to the extent of about 6.5 *mm.* He found with his instrument that atropine increases the intra-ocular pressure, while eserine diminishes it, especially in glaucomatous eyes. The instrument is cheap, easy of application, and gives useful results.

HIRSCHMANN.

b.—REMEDIES.

27. CHIBRET. Le sublimé dans l'antisepsie oculaire. *Soc. franç. d'ophth.*, 1885.

28. PIERD' HOUY. L' assettolo in oculistica. *Riforma med.*, vol. i., Jan., 1885.

29. PIERD' HOUY. L' albuminato di rame citro-ammonico in oculistica. *Gazz. med. ital. lomb.*, vol. vii., 2, Jan., 1885.

30. PIERD' HOUY. La scopolia japonica in oculistica. *Gazz. med. ital. lomb.*, vol. vii., 12 and 17.

CHIBRET (27) recommends sublimate in place of all other antiseptics. He directs a stream of a sublimate solution (1:2,000) against the diseased portion of the eye ; the deeper the infiltration of the tissue, the stronger the stream must be. Dianoux did not obtain any better results with sublimate, in the concentration in which it may be used for the eye, than with boracic acid.

MARCKWORT.

PIERD' HOUY (28) recommends aseptol as an antiseptic in ophthalmology. Its action is as powerful as that of carbolic acid, but it does not irritate the lids, the conjunctiva, and the corneal epithelium, like carbolic acid and thymol ; when used for spraying, it does not produce a burning sensation in the throat like salicylic acid, and does not obstruct the instruments with crusts like boracic acid. DANTONE.

PIERD' HOUY (29) has tried a new copper salt prepared by the chemist Carozzi (cupr. album. c. ammon. citrica, composed of thirty parts of oxide of copper, fifty-seven parts of citric acid, eight parts of albumen, and five parts of ammonia). He used it as a three-per-cent. solution and in the form of a salve, and found it as efficient as the ordinary salts of copper, though much less irritating. DANTONE.

PIERD' HOUY (30) has experimented with the extract of scopolia japanica, and later with the scopoline prepared by Merk, and has found that as a mydriatic it stands between belladonna and hyoscyamus ; it dilates the pupil ad maximum and paralyzes the accommodation, though more slowly and for a shorter space of time than belladonna. It might prove useful, therefore, for ophthalmoscopic purposes. DANTONE.

IV.—ANATOMY.

a.—GENERAL ANATOMY.

31. DE VINCENTIIS. Microftalmo bilaterale congenito con molteplici vizi di sviluppo del cuore. *Ann. di Ottalm.*, vol. xiv., 1.

Macro- and micro-scopical description of a case of bilateral microphthalmus ; the globes were the size of peas.

b.—VITREOUS AND LENS.

32. CZERMAK. The question of the zonula. *Arch. f. ophth.*, vol. xxxi., p. 79.

33. DUVAL et RÉAL. Homologies du peigne des oiseaux. *Soc. de biol.*, Dec. 6, 1884. The pecten of birds and the embryonic vitreous of mammals are homologous.

34. HÄNSELL. Recherches sur le corps vitré (conclusion). *Bull. de la clin. ophth.*, vol. iii., 1, p. 18.

CZERMAK (32) has made some new investigations concerning the zonula Zinnii, the results thus far arrived at being inconstant and even contradictory. Only Gerlach's view is tenable in general, while Aeby's is based on an erroneous interpretation, and the conditions described by Kuhnt and Berger simply do not exist. Czermak comes to the following conclusions : 1. The zonula is not a membranous tissue, but a somewhat complicated system of fibres. The space traversed by these fibres belongs to the posterior chamber and is filled with aqueous humor. There is no canal of Petit. 2. The fibres of the zonula come from the vitreous lamella of the pars ciliaris retinæ, not a single one from the vitreous. The vitreous lamella does not pass posteriorly into the internal limiting membrane of the retina, but into the outermost layer of the vitreous. 3. Between the fibres of the zonula a few endothelial plates and many wandering cells are found, which adhere to the fibres with their protoplasmatic processes. 4. As the vitreous lamina does not pass into the internal limiting membrane of the retina, but into the vitreous, this explains the microscopic preparations of Aeby and others, who mistook the detached vitreous lamina of the pars ciliaris retinæ for the zonula itself.

c.—RETINA AND CHOROID.

35. GOLDZIEHER. Peculiar ophthalmoscopic condition in amaurosis. *Wiener med. Wochenschr.*, 1885, No. 11.

36. MAGNUS. Peculiar congenital condition of the macula lutea in both eyes. *Klin. Montatsbl. f. Augenheilk.*, 1885, p. 42.

MAGNUS (36) found the region of the yellow spot of a white, shining appearance, surrounded by the well-known white reflex,

in the centre the cherry-red spot. A few small retinal blood-vessels were visible upon the white surface. The condition was the same in both eyes, and both were amaurotic. It is of interest to note that GOLDZIEHER (35) has recently observed a similar case, confirming the unique ophthalmoscopic observation of Magnus in every respect.

d.—OPTIC NERVE AND CENTRAL ORGANS.

37. MASSELON. Les prolongenients anormaux de la lame cribrée. *Soc. franç. d'ophth.*, Jan. 28, 1885.

38. MONAKOW. The optic-nerve centres and their connection with the visual sphere. *Verhandl. d. phys. Gesellsch. zu Berlin*, Nos. 6–8. *V.* No. 181 of the Report for 1884, German ed.

MASSELON (37) calls attention to the importance of being familiar with cases of congenital abnormal extent of the lamina cribrosa, so as not to confound them with pathological formations. The fibres can be distinguished from opaque nerve fibres by their direction, their interlacing, and color; the latter are also always separated from the papilla by a small zone in which the nerve fibres appear normal, while the abnormal extensions of the lamina cribrosa can be traced to the lamina cribrosa itself. Nicati speaks of the analogy existing between the fibres described by Masselon and fibrous formations observed in some cases of toxic amblyopia. Dor and Parent hold that abnormal continuations of the lamina cribrosa can easily be mistaken for opaque nerve-fibres.

MARCKWORT.

e.—LIDS AND CONJUNCTIVA.

39. WOLFRING. Contribution to the knowledge of the glands of the tarsal cartilage. *Wjestnik ophth.*, Jan., Feb., 1885.

WOLFRING (39) calls attention to the fact that Meibom's glands are longer in the middle of the tarsus and in the upper lid than at the ends of the tarsus and in the lower lid; that they are sometimes curved like a hook, pass around the orbital edge of the tarsus to its anterior surface, or coil themselves around an acino-tubular gland. In regard to the acino-tubular glands the author sustains his former results against Ciaccio, that they are contained in the orbital edge of the nasal half of the upper tarsus, where they open into the conjunctiva of the tarsus, while Kraus' glands generally open in the temporal half, thus insuring moisture to the whole conjunctiva. Wolfring sometimes found acino-tubular glands

between Meibom's glands, not only in the orbital edge of the tarsus, but also remote from it; their bodies extended to the anterior surface of the tarsus, but they opened upon the free tarsal surface of the conjunctiva. In the lower lid the distribution of acino-tubular glands between Meibom's glands is not constant. The author finds that the number, size, and distribution of Kraus' and other acino-tubular glands vary considerably. They certainly play an important part in the pathology of the conjunctiva.

HIRSCHMANN.

V.—PHYSIOLOGY.

a.—GENERAL PHYSIOLOGY.

40. TREITEL. A new method of determining numerically the perception of light. *Centralbl. f. prakt. Augenhk.*, Jan., 1885.

41. TREITEL. On hemeralopia and the examination of the perception of light. *Arch. f. Ophth.*, vol. xxxi., 1.

42. WOLFFBERG. On testing perception of light. A physiologico-clinical study. *Arch. f. Ophth.*, vol. xxxi., 1. From a review by the author.

b.—RETINA AND CENTRAL ORGAN.

43. BERGER. The localization of the cortical visual sphere in man. *Breslauer ärztl. Zeitschr.*, 1885, Nos. 1–5.

44. DEBENEDETTI. Determinazione del centro del movimento del globo oculare. Casimiro Sperino. Festival essay, p. 139.

45. DENISSENKO. The question of the origin of the photopsias in the retina. *Wjestnik ophth.*, Jan., Feb., 1885.

46. EXNER. Critical report on the later physiological investigations in regard to the cortex of the brain. *Biologisches Centralbl.*

BERGER (43) comes to the following conclusions: 1. The first gyrus (and especially its middle portion) of the occipital lobe, now generally recognized by physiologists and pathologists as the visual sphere, is of special importance; the removal of this particular portion alone is sufficient to produce a disturbance of vision. 2. The removal of the cortex alone (at the point named), the corona radiata belonging to it remaining intact, suffices to produce a disturbance of vision. 3. This disturbance of vision is but transitory as long as the other hemisphere remains intact. 4. As regards the much-discussed question of substitution, the

hypothesis holds good in regard to the cortical centre of vision in man which maintains that the corresponding portions of the other hemisphere act in place of the destroyed parts.

DENISSENKO (45) tries to prove that the photopsias described by Mayerhausen are not due to irritation of the nervous elements of the inner granular layer by the overfull blood-vessels, as Mayerhausen supposes, but to mechanical irritation of the rods and cones situated beneath the distended blood-vessels.

HIRSCHMANN.

c.—IRIS.

47. KOWALEWSKY. Investigations on the innervation in dilatation of the pupil. Kasan, 1885.

48. ZEGLINSKI. Experimental investigation on the movement of the iris. *Arch. f. Anat. u. Phys.*, phys. Abth., 1885, 1 and 2.

KOWALEWSKY'S (47) paper consists of an exhaustive historical review of the investigations of the nerve-centres controlling the dilatation of the pupils, followed by a long series of investigations of his own, from which he draws the following conclusions: 1. The hypothesis of Schiff and Salkowsky, as to the course of the nerve fibres dilating the pupils, from the intra-cranial centre through the lateral portion of the cervical portion of the spinal cord, and through the cervical portion of the sympathetic nerve to the eye; also, 2. The hypothesis of Budge, of the existence of an autonomous centre in the spinal cord for the fibres dilating the pupil, do not agree with the facts. 3. The autonomous centre of the fibres dilating the pupil, lies in the cranial cavity, and can be excited by reflex irritation. 4. Inter-central exciting fibres pass from this centre to the cellular origin of the dilators of the pupils in two directions, through the cerebrum and through the spinal cord. 5. The fibres passing through the spinal cord seem to take their course through the lateral columns; each lateral column contains exciting fibres for both sides. 6. The dilators of the pupils coming from the spinal cord do not all pass to the eye through the cervical portion of the sympathetic nerve, some taking another course (vertebral nerve ?). 7. The lateral columns are the main channels for transmitting the irritation from the sciatic nerves to the cerebral centre of the dilators of the pupils, each column containing fibres of both sciatic nerves in the cervical portion of the spinal cord. Each one is capable of trans-

mitting reflex irritation to the dilators of the pupils of both sides. 8. The author also calls attention to the pneumogastric, hypoglossus, lingual, and infra-orbital nerves, which also dilate the pupils by reflex irritation, as well as the sensory nerves. 9. The cerebral centre of the dilators of the pupils can also be excited directly by checking the supply of arterial blood to the brain (by compressing the carotids), and by suppressing respiration. 10. The autonomous centre for the innervation of the third lid, and dilatation of the pupil (protrusion of the eyeball), is also situated in the brain. The fibres coming from it pass only through the spinal cord, through the lateral columns. The peripheral fibres do not all pass through the cervical portion of the sympathetic nerve after leaving the spinal cord, some taking another course.

HIRSCHMANN.

ZEGLINSKI (48) finds that in birds all the fibres which dilate the pupils enter the eye through the ophthalmic branch of the fifth nerve. No fibres affecting the movements of the iris are contained in the cervical portion of the sympathetic nerve of birds. The fibres contracting the pupils pass through the trunk of the oculomotor nerve, through the ciliary ganglion and the ciliary nerves to the ciliary plexus, and thence to the iris. The iris of pigeons is not affected by atropine. The action of atropine on the eyes of mammals is probably due to paralysis of the terminations of the oculomotor nerve, and irritation of the sympathetic nerve. Instillation of curare into the conjunctival sac of birds produces dilatation of the pupil; probably the terminations of the oculomotor nerve are paralyzed. Eserine contracts the pupil by irritating the peripheral endings of the oculomotor nerve. Nicotine acts as a powerful myotic in birds; it irritates the fibres which contract the pupil. He supports the theory which assumes the existence of both a sphincter and a dilator muscle. He declares that the participation of the blood-vessels in dilating the pupil is by no means proven.

VI.—ANOMALIES OF REFRACTION AND ACCOMMODATION.

49. DOBROWOLSKY, W. The question of the development of myopia. *Zeh. klin. Monatsbl. f. Augenhk.*, vol. xxiii., p. 157.

50. ABADIE. Des complications de la myopie progressive. *Soc. franç. d'ophth.*, Jan. 29, 1885; *Rev. clin. d'ocul.*, 1885, No. 3, p. 72.

51. SEELY. Experiences in refractive cases. *Trans. Amer. Ophth. Soc.*, 1884.

52. RISLEY, T. D. A case of hypermetropic refraction passing, while under observation, into myopia. *Trans. Amer. Ophth. Soc.*, 1884.

53. CUTTER, J. C. Myopia among students of Sapporo Agricultural College. *Supplement to the Trans. of the Seikwai*, Tokio, Jan., 1885.

54. HAY, G. Two cases in which Rählmann's hyperbolic lenses improved vision. *Trans. Amer. Ophth. Soc.*, 1884.

DOBROWOLSKY (49) shows how convergence, according to Förster's view, plays the most important part in the development and increase, respectively, of myopia, though there are also cases in which accommodative efforts without convergence produce myopia.

ABADIE (50) recommends tenotomy of the external recti muscles in certain cases of progressive myopia with insufficiency of the internal recti muscles and affections at the posterior pole of the eye; he claims that the operation has a beneficial effect not only upon the muscular asthenopia, but also upon sight and refraction. Bacchi cites himself as an instance of the success of the operation performed on him by Reymond in 1869. Javal seeks the principal cause of progressive myopia, not like Abadie, in convergence, but in accommodation. Dransart attributes the beneficial influence of Abadie's operation to the better surface of filtration produced by it; he therefore recommends iridectomy and sclerotomy in progressive myopia. Chibret believes that both accommodation and convergence are the cause of progressive myopia. Suarez does not prescribe concave glasses until he has made three examinations: one without atropine, one under atropine, and one final examination. According to Dor, treatment with prisms suffices when the dynamic divergence does not exceed 6°; in higher degrees, tenotomy must be performed. Sedan recommends homatropine instead of atropine for preventing the strain on the accommodation. MARCKWORT.

SEELY (51) believes that mixed astigmatism is much rarer than commonly supposed—not having seen a single case in which it was a fixed condition. This, we think, will not be substantiated by the majority of practitioners. Nearly all his examinations are made under a mydriatic, and he always tests the muscular balance. BURNETT.

RISLEY'S (52) patient was a young girl of ten years, with a family history of nervous affections. She herself was affected

with chronic symptoms, and had a mild choroiditis and a low degree ($\frac{1}{60} \supset + \frac{1}{60}{}^{c}$ ax. 90°) of compound Ah. She complained of headache and photophobia. Six years later the refraction had changed to a low degree of compound Am. Correcting glasses gave relief to the head-symptoms and brought V up to $\frac{20}{40}$. BURNETT.

CUTTER (53) gives the results of the examination of the Japanese students at this college for four years. The following is a summary: Per cent. of M. on entrance to college, 29.5; per cent. of all classes, 54; per cent. of students developing visual incapacities after entrance, 23. No color-blindness was found. BURNETT.

HAY (54) describes two cases in which Rählmann's hyperbolic lenses improved vision. In case 1: in R + $\frac{1}{10}{}^{c}$180°, in L + $\frac{1}{12}{}^{c}$180°, V = $\frac{20}{40}$. The patient however prefers for L 0.5 system B of Rählmann, and for R 0.5 system A. What improvement in V these give over cylinders is not stated. In case 2: R − 6^{c} 15°, V = $\frac{20}{200}$; L + 2 ⌒ 4^{c} 135°, V = $\frac{20}{30}$. With 1. system A, L has V = $\frac{20}{40}$ +. R with 2 A has V = $\frac{20}{40}$. BURNETT.

VII.—LIDS.

55. STORY, J. B. The operative treatment of entropium and trichiasis. *Ophth. Rev.*, 1885, vol. iv., No. 41, p. 72.

56. DE WECKER, L. Suture contre l' ectropion. *Gaz. méd. de Paris*, 1885, No. 8.

57. GARD. Méthode électrolytique appliqueé à la guérison du chalazion et des kystes glandulaires en général. *Rev. clin. d' ocul.*, 1885, No. 3, p. 85.

58. LEPLAT. Angiome de la face et des paupières guéri par l' électrolyse. *Ann. de la soc. méd. chir. de Liège*, 1885.

59. MACHARDY. Case of ectropium. *Med. Times and Gaz.*, 1885, No. 1812. *The Lancet*, 1885, vol. i., No. 13.

60. MACHARDY. Favus of the eyelid. *Ibid.*

61. SCHENKL. Extirpation of a tumor of the lid, blepharoplasty. Death six (?) hours after the operation. *Prager med. Wochenschr.*, 1885, No. 15.

62. STORY, J. B. Epithelioma of the eyelid, resulting from irritation by crude carbolic acid. *Ophth. Rev.*, 1885, vol. iv., No. 43, p. 125.

63. PIERD' HOUY. Blefaroplastiche per innesti dermicie blefarorrafie. *Gaz. d' ospitali*, 1885, vol. vi., 3.

64. TERRIER, F. De l' emploi du cautère actuel et du thermo-cautère dans le traitement de l' ectropion, de l' entropion, et du trichiasis. *Arch. d' ophth.*, 1885, vol. v., i., p. 9.

65. BAUDRY. Contribution à l' étude du chancre des paupières. *Arch. d' ophth.*, 1885, vol. v., i., p. 55.

66. TRÉLAT. Epithelioma de la paupière inférieure. *Gaz. des hôp.*, 1884, p. 901.

67. RAMPOLDI. Tre casi di blepharoptosi congenita atrofica. *Ann. di ottalm.*, vol. xiv., 1.

68. SWANZY, H. R. Transplantation of skin flaps without a pedicle for the cure of cicatricial ectropia. *The Lancet*, 1885, vol. i., No. 13, p. 568.

69. MACHARDY. Fat in upper eyelids. *Ophth. Soc. Unit. Kingd.*, May 14, 1885.

70. DERBY, R. H. A case of gangrene of the lids, with subsequent restoration of tissue without a plastic operation. *Trans. Amer. Ophth. Soc.*, 1884.

71. FRYER, B. E. A successful case of skin-flap transplantation without a pedicle, after removal of an epithelioma from the lower lid. *Trans. Amer. Ophth. Soc.*, 1884.

72. BULL, C. S. Three cases of restoration of the eyelid by transplantation of a flap without a pedicle. *Trans. Amer. Ophth. Soc.*, 1884.

STORY (55) reports four cases in which he cured entropium and trichiasis by transplanting a flap of mucous membrane or skin to the conjunctiva of the lids.

WECKER (56) makes use of a suture with two stitches in senile ectropium, which he expects to draw the conjunctiva inward without producing inversion of the eyelashes.

LEPLAT (58) reports the cure by electrolysis of a congenital and still growing angioma of the lids of the left eye and adjoining cheek and temple in a child eight years old. Two needles are always introduced beneath the skin, and at each sitting—twenty-nine in all—the negative needle is pushed in two or three times at different places, the positive needle remaining in position. The stitch canal suppurated only twice. The author recommends platinum instead of golden needles, at least for the positive pole, as Nieden has also done. v. MIDDLESTÄDT.

MACHARDY (59) operated upon a man thirty-nine years old ac-

cording to a new method proposed by Argyle Robertson, for ectropium of the upper lid, the result of chronic conjunctivitis. He also (60) saw a large ulcer of the upper lid extending to the margin of the conjunctiva in a woman thirty-seven years old. He extirpated it and found that it was due to favus.

SCHENKL (61) performed blepharoplasty in narcosis without accident, upon a woman sixty-six years old, after removing a tumor of the lid. Two (?) hours later the patient fell into collapse and died. The autopsy showed that embolism of the coronary artery was the cause of death.

An epithelioma of the upper lid developed from the long-continued influence of carbolic acid, and was removed by STORY (62) by a V-shaped excision. The lid was shortened, but could perform its functions.

PIERD' HOUV (63) transplanted flaps without a pedicle from the inner surface of the upper arm in three cases of ectropium on account of the size of the defect; they took hold very well.

DANTONE.

TERRIER (64) gives a historical review of the methods of treating ectropium, entropium, and trichiasis with the actual cautery. In entropium and trichiasis he makes a wound with the thermo-cautery along the edge of the lid penetrating to the cartilage; in some cases he first divides the skin of the lids with a knife. Good results were attained in three cases. Four other cases illustrate the method devised by Vieusse: two or three linear wounds 1½ *cm.* long are made with the thermo-cautery perpendicular to the edge of the lid, but not penetrating to the cartilage. The scars are scarcely visible in either method, especially the former.

V. MITTELSTÄDT.

RAMPOLDI (67) describes three cases of congenital complete blepharoptosis. Strange to relate, two of them occurred in father and son, and a third in an inhabitant of the same district.

DANTONE.

SWANZY (68) performed transplantation of flaps without a pedicle in six cases of cicatricial ectropium, in four of them successfully.

MACHARDY (69) observed in a girl of sixteen marked development of fatty tissue, causing deformity of the upper lid. He excised an elliptical piece, which greatly improved the condition.

DERBY'S (70) interesting case shows how efficiently nature can repair her losses without the assistance of the surgeon's knife.

BURNETT.

FRYER (71) reports the successful transplantation of a skin flap without a pedicle to the lower lid after the removal of an epithelioma. The point of difference between the operation and that usually done, was the absence of sutures and the application of goldbeater's skin-plaster fitting closely to all irregularities of surface. There was no suppuration. BURNETT.

BULL'S (72) cases were all successful, there being no suppuration except at the points where the sutures were inserted. In one case there was no great shrinkage six months after the operation ; in the others contraction was still in progress.
BURNETT.

BAUDRY (65) observed transmission of syphilis to two children by adults, who tried to remove with saliva the crusts along the margins of the lids due to blepharo-conjunctivitis. In both cases the chancre was situated near the inner canthus, once above and once below, near the lachrymal points. The author also discusses other ways of transmitting syphilis to the eyes and their appendages. V. MITTELSTÄDT.

VIII.—LACHRYMAL APPARATUS.

73. MANHAVIELLE. Essai sur la tumeur et la fistule lacrymale et leur traitement spécialement par l'ignipunctur du sac. *Thèse de Montpellier*, 1884.

74. POOLEY, T. R. Case of acute dacryoadenitis. *Trans. Amer. Ophth. Soc.*, 1884.

75. JOYE, T. A. The treatment of chronic dacryocystitis. *Med. Rec.*, May 16, 1885.

In obstinate cases of lachrymal affections MANHAVIELLE (73) advises treatment of the mucous membrane with the thermocautery after previously splitting the skin or fistula. Four observations. V. MITTELSTÄDT.

POOLEY (74) reports an acute inflammation of the lachrymal gland of the right eye during the subsidence of a diphtheritic inflammation of the conjunctiva of the left. There was a temperature of 100°, and a pulse of 120. There was a clearly outlined, painful tumor at the upper outer angle of the orbit, associated with swelling of the lids and chemosis. It did not go on to suppuration. The treatment was hot compresses, quinine, and iron.
BURNETT.

JOYE (75) relates three cases in which the injection into the sac of a four-grain solution of atropine was followed by a cessation of

the discharge. In all the cases other methods—probing, astringents, etc.—had been of no avail. BURNETT.

IX.—MUSCLES AND NERVES.

76. CLARK, C. J. A case of divergent squint. Unusual difficulties in correcting it by operation. *Amer. Journ. Ophth.*, vol. i., 9, p. 273.

77. DE WECKER, L. Procédé opératoire contre le strabisme. *Soc. franç. d'ophth.*, Jan. 26, 1885. *Gaz. méd. de Paris*, 1885, No. 8.

78. LAINEY. De l'avancement capsulaire. *Thèse de Paris*, 1885.

79. LANDOLT. De l'amplitude de convergence. *Arch. d'ophth.*, 1885, vol. v., 2, p. 97.

80. STILLING, J. The development of squint. *Arch. f. Augenhk.*, vol. xv., p. 73.

81. EALES, H. The causes and treatment of convergent squint. *Birm. Med. Rev.*, 1885, p. 164.

82. FUCHS, E. A peculiar form of muscular asthenopia. *Arch. f. Augenhk.*, vol. xiv., p. 385.

CLARK (76) describes a case of divergent squint. Simple division of both external recti giving no relief, the author, after again dividing them and inserting a suture in the conjunctiva of each eye near the inner margin of the cornea, passed them through the skin at the inner canthus and tied them across the bridge of the nose, producing thus a considerable degree of convergence. In this manner parallelism of the visual axes was finally obtained. BURNETT.

WECKER (77) discusses and recommends advancement of Tenon's capsule, lately published by himself, combined with tenotomy. Abadie prefers this operation to advancement of the muscle, as its effect can be more easily increased or decreased in a few days, while Meyer prefers the simple conjunctival suture to the other two operations. MARCKWORT.

LANDOLT (79) explains his method of determining the amplitude of convergence with his ophthalmodynamometer, and commends the instrument as suitable for determining muscular asthenopia, especially in those cases which can be cured only by operation. The amplitude of convergence is equal to the difference between its maximum and minimum, and under normal conditions is equal to

about 10.5 metreangles (Nagel). Ametropia, except of high degree, has no influence upon it. A portion of the amplitude of convergence is positive, and equal to the angle included between ∞ and the punct. prox., or about 9.5 metreangles; the negative portion, beyond ∞, is equal to 1.5 metreangles. Landolt found that in near work the amplitude of convergence should not exceed ⅓ of the total positive amount, otherwise muscular asthenopia will be the result. If the latter exists, the instrument will determine its degree, and the ratio between the positive and negative amplitude, a determination of the greatest importance in deciding whether tenotomy, with or without advancement, or the latter alone, shall be performed. Landolt is very much in favor of simple advancement, which does not produce diplopia for distance, like tenotomy of the external rectus, without materially increasing the amplitude of convergence, but increases the latter towards the positive side, and, what seems strange, towards the negative also, as could be demonstrated beyond a doubt. Landolt's instrument also seems well adapted for determining the immediate effect of the operation. v. MITTELSTÄDT.

According to STILLING (80) strabismus consists in relinquishing binocular fixation, and placing one eye in its natural position of equilibrium. If this is convergence, convergent strabismus results; if divergence, divergent strabismus; if it is a parallel position of the axes, an absolute strabismus cannot result. In the majority of cases of hypermetropia, convergence is the position of equilibrium, in myopia divergence.

FUCHS (82) reports a peculiar case of muscular asthenopia in a hypermetropic individual.

83. MAUTHNER, C. The pupil and accommodation in paralysis of the oculomotor nerve. A contribution to the knowledge of nuclear paralysis. *Wiener med. Wochenschr.*, 1885, Nos. 8, 9, 10.

84. JAN. Paralysie du nerf moteur oculaire commun de l'œil droit d'origine nicotinique. *Rec. d'ophth.*, 1885, No. 2, p. 98.

85. MENDEL. Contribution to the knowledge of diphtheritic paralysis. *Centralbl. f. prakt. Augenhk.*, 1885, p. 89.

86. PARINAUD et MARIE. Névralgie et paralysie oculaire à rechutes. *Rev. clin. d'ocul.*, 1885, No. 3, p. 80.

87. UHTHOFF, W. A case of paralysis of all the muscles of the eye after diphtheria of the throat. *Neurol. Centralbl.*, 1885, No. 6.

88. Szili. Ophthalmoplegia chronica progressiva. *Wiener med. Wochenschr.*, 1885, No. 10.

89. Kazaürow. A case of nuclear ophthalmoplegia. *Wjestnik ophth.*, March, April, 1885.

Mauthner (83) divides the paralysis of the oculomotor nerve: (1) into those in which the iris and accommodation are not affected; (2) into those in which the sphincter is paralyzed while the accommodation remains intact; (3) into those in which only the reaction to light is lost; and finally (4) into those in which the pupil is contracted. They are all explained by referring them to a nuclear cause. In the last form of paralysis of the oculomotor nerve, the total paralysis, with dilatation of the pupil ad maximum, the cause may be situated at the base of the brain, though a nuclear affection is not excluded.

Jan (84) describes a case of paralysis of the right oculomotor nerve (ptosis, strabismus divergens, dilatation of the pupil), which he is inclined to attribute to tobacco-poisoning. There were no color-scotomata, and V was good. Marckwort.

Mendel (85) observed paralysis of the velum palati, of both oculomotor nerves, and weakness of the lower extremities, after diphtheria of the throat. The patient died soon afterwards of paralysis of the lungs. The autopsy of the brain showed marked hyperæmia of its smaller arteries and capillaries, also capillary hemorrhages, and hemorrhages in the region of the nucleus of the oculomotor nerve, in the pons, and in the medulla oblongata. The ganglionic cells of the nuclei of the nerves were normal, but parenchymatous and interstitial neuritis were easily traceable in the peripheral nerves, especially the oculomotor, abducent, and pneumogastric nerves, in their course within the substance of the brain and after their exit.

Uhthoff (87) reports the case of a boy in whom paralysis of all the muscles of the eye gradually developed two weeks after diphtheria of the pharynx, accompanied by weakness of the lower extremities. The former condition had disappeared after eight weeks.

Szili (88) reports a case of chronic progressive ophthalmoplegia in a woman forty years old, with concentric limitation of the field of vision, discoloration of both optic nerves, divergence of the globes, and a sinking down and complete closure of the lids.

X.—ORBIT AND NEIGHBORING CAVITIES.

90. Lopez. Kyste sebacé volumineux de l'orbite. *Rec. d'ophth.*, 1885, No. 2, p. 103.

91. CAMPART. Contribution à l'étude de l'angiome caverneux de l'orbite. *Bull. des quinze-vingts*, 1885, p. 1.

92. KIPP, J. C. Cases of disease of the frontal sinus. *Trans. Amer. Ophth. Soc.*, 1884.

93. NORRIS, W. F. Myxosarcoma of the orbit. *Trans. Amer. Ophth. Soc.*, 1884.

94. LIPPINCOTT, J. A. Two cases of orbital abscess. *Trans. Amer. Ophth. Soc.*, 1884.

LOPEZ (90) describes an atheroma of the orbit the size of a pigeon's egg; it was situated in the upper outer portion of the orbit and had pushed the eye downwards and inwards. It was divided into two parts and removed. The pressure of the tumor had produced neuro-retinitis, which, together with ptosis, still existed almost unchanged a month after the operation.

MARCKWORT.

CAMPART (91) saw a cavernous angioma of the orbit develop in a girl of fourteen in the course of four years, due to the blow of a blunt object on the supraciliary region. When removed it was found to be attached to the external rectus muscle and to have a continuation extending posteriorly. V. MITTELSTÄDT.

KIPP (92) reports two cases of disease of the frontal sinus. Case 1.—Abscess of frontal sinus, ethmoidal and sphenoial cells. The patient was a man 54 years old, who had suffered many years with frontal headache. About a year before he was first seen he had noticed diplopia and protrusion of the left eye. A tumor was felt at the upper inner part of the orbital cavity, which pushed the globe downwards and outwards. V was not impaired. The probable diagnosis was a sarcoma of the periosteum. On exploration the tumor was found to be hard as bone in places, and gave way at one point under pressure, letting out a quantity of fetid pus. The eyeball resumed its normal position, but in ten days a pneumonia set in which terminated the patient's life. A post-mortem examination showed that the frontal sinus, ethmoidal cells, and sphenoid sinus had been converted into one large cavity, whose bony walls were carious. The dura mater was normal. Case 2.—Distension of the frontal sinus; cured by applications to the mucous membrane of the nose and pressure on the tumor. The patient was a woman 57 years of age, who had suffered for many years from an almost constant pain in the left frontal region. She had always had a naso-pharyngeal catarrh. A tumor

about the size of a hickory-nut was situated at the upper inner angle of the orbit, which displaced the ball down and out. At one examination the tumor gave way under pressure, and a quantity of bloody muco-purulent matter passed into the throat. After this the sac was frequently emptied by pressure, and the nasal mucous membrane treated with nitrate of silver. The eye regained its proper position. V is normal. BURNETT.

NORRIS' (93) patient was a child 4 months old. The right eye became prominent at two months. In two weeks from the time when first seen, a hard tumor was felt at the inner edge of the orbit, and the eyeball was turned in and down. The contents of the orbit were evacuated. The growth was found attached to the periosteum in places, and these were scraped clean. There was a recurrence of the growth on the lower lid in a year, which was removed. A third recurrence, which was not seen by the author, resulted in the death of the child from loss of blood. The tumor was found on examination to be a round- and spindle-celled sarcoma, with a large development of myxomatous tissue.

BURNETT.

LIPPINCOTT (94) reports two cases of orbital abscess. Case 1. —A child who was recovering from an attack of erysipelas of the face and scalp was seized with exophthalmus accompanied by febrile disturbances. The eyeball was protruded half an inch, hardly movable, and directed downwards and outwards. An incision was made to the inner side of the globe and a little upwards, and a drachm of pus was let out. There were at no time any abnormal ophthalmoscopic appearances, nor was V impaired. Case 2 was one of idiopathic abscess of the orbit in a girl a year old. The abscess was emptied. but there was atrophy of the disc and narrowing of the retinal vessels. V = perception of light.

BURNETT.

XI.—CONJUNCTIVA, CORNEA, SCLEROTIC.

95. HAAB, O. The etiology and prevention of blennorrhœa neonatorum. *Correspondenzbl. f. Schweizer Ærzte*, 1885.

96. UFFELMANN. The prevention of blennorhœa neonatorum. *Deutsche Medicinalztg.*, 1885, No. 6.

97. DARRIER. De l' ophthalmie virulente. *Rev. clin. d' ocul.*, 1885, No. 3, p. 79.

98. FIEUZAL. Conseils aux mères dans le but de prevenir

l'ophthalmie purulente des nouveaux-nés. *Bull. de la clin.-nat. ophth.*, 1885, vol. iii., 1, p. 78.

99. KIPP, C. J. On the prevention and treatment of purulent conjunctivitis. *Trans. Med. Soc. of N. J.*, 1884.

100. ABADIE. De l' ophthalmie virulente. *Progr. méd.*, 1885, p. 1087.

101. BROWNE, E. A. The treatment of blennorrhoic conjunctivitis. *Brit. Med. Journ.*, Jan. 10, 1885, p. 68.

102. MCKEOWN, D. Prevention of ophthalmia neonatorum and its ravages. *The Lancet*, Feb., 1885, p. 345.

103. COWELL, G. Purulent ophthalmia in infants. *Brit. Med. Journ.*, March, 1885, p. 508.

104. SÉDAN. Note sur un cas d' ophthalmie catarrhale de forme intermittente. *Soc. franç. d'ophth.*, Jan. 29, 1885.

105. LUCAS, CLEMENT. Gonorrhœal rheumatism in an infant, the result of purulent ophthalmia. *Ophth. Rev.*, 1885, No. 42, p. 114.

106. WIDMARK, JOHANN. Ytterligare nagra iakttagelser om gonokockernas förekomst vid purulent konjunktivit samt vid purulent vulvovaginit hos minderariga. *Hygiea*, 1885, vol. xlvi., No. 6.

107. ANDREWS, J. H. Jequirity ophthalmia. *Trans. Amer. Ophth. Soc.*, 1884.

108. THIERON. Le jequirity, effets physiologiques et applications therapeutiques. *Thèse de Montpellier*, 1884.

109. PEUNOW, A. The application of jequirity in trachoma. *Wjestnik ophth.*, 1885, Nos. 1 and 2.

110. SATTLER, R. The physiological effects and therapeutic uses of berberine and hydrastine in ophthalmic and aural practice. *Drugs and Medicines of North America*, 1885, vol. i., 5, p. 171.

111. GELPKE, TH. On pemphigus of the conjunctiva. *Zeh. klin. Monatsbl. f. Augenhk.*, 1885, p. 191.

112. STEFFAN. Pemphigus of the conjunctiva. *Zeh. Klin. Monatsbl. f. Augenhk.*, 1885, p. 214.

113. GAYET. La tuberculose conjonctivale. *Soc. franç. d' ophth.*, Jan. 28, 1885.

114. PFLÜGER. Melanosarcoma of the conjunctiva. *Bericht d. Univ. Augenkl. zu Bern für* 1883, Bern, 1885, p. 16.

115. BURCHARDT, CL. The treatment of eczema. *Monatsbl. f. prakt. Dermatologie*, 1885, No. 2.

HAAB (95) calls attention to the fact that since the introduction of Credé's method the percentage of blennorrhœa neonatorum has fallen from nine to one per cent., and therefore recommends making it obligatory. Simple catarrh of the new-born must be distinguished from blennorrhœa. In the latter Neisser's gonococci are always found, in the former not.

UFFELMANN (96) also considers Credé's method a great advance in preventive medicine. He wants to confine the practice of the method, however, to the lying-in asylums for the present. The midwives should be instructed to report at once to the physician even the slightest case of inflammation of the eye. FIEUZAL (98), MCKEOWN (102), and COWELL (103) entertain similar views.

KIPP (99) believes thoroughly in the inoculative origin of ophthalmia neonatorum, and thinks it can be prevented by cleanliness and antiseptic treatment of the mother and child during and immediately after parturition. In the treatment of the disease when established he employs cleanliness and cold in the early stages; in the second he uses nitrate of silver, beginning with a one-per-cent. solution, and increasing it if necessary to two per cent. BURNETT.

ABADIE (100) recommends, as he has done before, energetic cauterization with nitrate of silver at intervals of twelve hours, in severe cases of blennorrhœa in which the micrococcus is present, in order to prevent affection of the cornea. In milder forms, in which the micrococcus is absent, weaker solutions and even simple antiseptic cleansings are sufficient. v. MITTELSTÄDT.

BROWNE (101) recommends an apparatus constructed by himself for removing blennorrhoic pus from the fornix of the upper lid in cases of great swelling. He uses a two-per-cent., and afterwards a one-per-cent., trichlor.-phenol solution for irrigation.

SÉDAN (104) reports a case of intermittent fever observed in Algier, in which muco-purulent discharge developed in both eyes during the febrile attacks, which disappeared as soon as the fever ceased. MARCKWORT.

LUCAS (105) observed swelling of the left knee in an infant eighteen days old, suffering from blennorrhœa neonatorum. He is inclined to believe in a connection between the two diseases. The gonorrhoic virus was absorbed by the conjunctiva, and thus entered the body.

WIDMARK (106) found the gonococcus in nineteen among twenty-

five cases of blennorrhœa neonatorum. The secretion was transferred to the male urethra in three cases, but without success.

ANDREWS (107), after considering some of the causes of the disastrous results of jequirity ophthalmia, suggests that the best way to avoid them is to begin with mild doses of the remedy—two-per-cent. infusion when there is pannus, and one-per-cent. when the cornea is free, and insists that the action of the drug should never be kept up by compresses wet with the infusion.

BURNETT.

THIERON (108) saw very severe consequences follow the introduction of pulverized jequirity beans into the eyes of five Indians, who had resorted to them to escape military service. Although treatment was begun two days later, the final result was either total or adherent leucoma, staphyloma, and total atrophy. Jequirity powder produced infiltration of the cornea in dogs. According to Thieron, jequirity should not be used either as a powder or as a salve, but only as an infusion. Wecker's method gives good results in properly selected cases.

V. MITTELSTÄDT.

PEUNOW (109) favors the two-per-cent. cold infusion, which is strong enough when used fresh, and is less dangerous to the cornea than stronger infusions. His results are not particularly satisfactory. HIRSCHMANN.

SATTLER (110) found that berberine solutions had little or no effect on the catarrhal inflammations of the conjunctiva. On the contrary the hydrochlorate of hydrastine was found of decided benefit in the chronic forms of this affection. It is also of use in granular conjunctivitis and marginal blepharitis. It is used in aqueous solutions of from two to five per cent. BURNETT.

GELPKE (111) reports a case of pemphigus of the conjunctiva. The corneæ sloughed, and the eyes were destroyed. STEFFAN (112) also reports that in the case previously described by him, sloughing of the cornea had set in.

GAYET (113) reports a case of tuberculosis of the conjunctiva, during the course of which swelling and suppuration of the cervical glands set in. The microscopical examination showed it to be the lupous form of tuberculosis. Lupus is now considered only a variety of tuberculosis, but, as Parinaud says, the clinical difference is very great. Dufour mentions a case analogous to that of Gayet, in which the lungs were still free four years after the beginning of the conjunctival affection. In a case of tubercu-

losis of the cornea observed by Nicati, death occurred two months later from acute phthisis. MARCKWORT.

PFLÜGER (114) removed a small-celled melano-sarcoma from the inner angle of the conjunctiva of the right eye.

BURCHARDT (115) calls attention to the causal connection between moist eczema and affections of the conjunctiva and cornea. The former he cures, after he has removed the crusts by soaking, and cut off the hairs, by brushing a three-per-cent. solution of nitrate of silver over it, daily at first, afterwards every other day. The affection of the eye generally disappears of its own accord.

116. ADLER, H. The electrolytic treatment of permanent opacities of the cornea. *Wiener med. Wochenschr.*, 1885, No. 18.

117. CICARDI. Un nuovo caso di stati linfatica oculare. *Ann. di ottalm.*, vol. xiv., 1.

118. RAMPOLDI. Pro justitia et veritate. *Ann. di ottalm.*, vol. xiv., 1.

119. FROTHINGHAM. A case of corneal staphyloma; enucleation with remarks. *Physician and Surgeon*, May, 1884.

120. ABADIE, CH. Traitement du staphylôme partiel et progressif; staphylotomie. *Ann. d'ocul.*, 1885, vol. xciii., p. 5.

121. DAGUILLON. Contribution à l'étude du staphylôme pellucide conique de la cornée. *Bull. de la clin.-nat. ophth.*, 1885, vol. iii., 1, p. 60.

122. GALEZOWSKI. De l'anesthesie de la cornée dans l'herpes febrile de cette membrane. *Rec. d'ophth.*, Mar., 1885.

123. DOLSCHENKO, B. Cancer of the cornea. *Wjestnik ophth.*, 1885, vol. i., pp. 23–31.

124. PANAS et VASSAUX. Étude experimentale sur la tuberculose de la cornée, *Soc. franç. d'ophth.*, Jan. 28, 1885. *Gaz. méd. de Paris*, 1885, No. 8.

125. FALCHI. Fibroma della cornea. *Ann. di ottalm.*, vol. xiv., 1, p. 36.

126. MAGAWLY. Lepra infiltrations in the cornea. *Petersb. med. Ztg.*, 1885.

ADLER (116) treated a number of corneal opacities with the constant current. He used five elements and applied Seeger's electrode directly to the affected cornea of the eye previously put under the influence of cocaine and atropine. They cleared up partially after being treated from three to four weeks. The

method, however, is contra-indicated in total leucoma attended with inflammation of the iris, cornea, and conjunctiva.

CICARDI (117) reports another case of opacity of the cornea which appeared when the head was bent forward. Rampoldi has observed several instances of this kind, and he attributes them to an infiltration of the cornea with lymph corpuscles. Cicardi's case was one of a girl of fourteen with iritis, adhesions, and turbidity of the aqueous of the left eye. The phenomenon, however, was observed in both eyes, though there was only slight photophobia of the right eye. DANTONE.

A review by Remak in the *Centralbl. f. Augenhk.*, of Nagel's "Ein pathologisches Circulationsphänomen" leads RAMPOLDI (118) to deny that in the cases described by him the infiltration of the cornea was due to pus corpuscles which had entered the posterior layers of the cornea from the anterior chamber. He sustains his observations of the lymphatic infiltration of the cornea, and reports a case of hemorrhage into the anterior chamber, in which the blood entered between Descemet's membrane and the endothelium when the head was inclined forward, penetrating to the centre of the cornea and returning but very slowly. DANTONE.

FROTHINGHAM (119) condemns as unsafe every operation other than enucleation for staphyloma of the cornea. BURNETT.

In cases of progressive partial staphyloma of the cornea, due to extensive anterior synechiæ, ABADIE (120) recommends abscission of the iris from the cornea with a Graefe knife, thus terminating the harmful strain upon the iris. Abadie performs the operation by passing a knife through the iris behind the leucoma, and then abscising the iris by sawing movements. MARCKWORT.

GALEZOWSKI (122) discusses febrile herpes of the cornea, and calls particular attention to the insensibility of the affected portion of the cornea, a fact frequently of importance for the diagnosis. Compressive bandage not only alleviates the pain, but also aids in the recovery. Three clinical histories. MARCKWORT.

DOLSCHENKO (123) describes a case of cancer of the cornea. The tumor occupied its whole surface and thickness as far as the limbus, from which it possibly started. The conjunctiva was unaffected and densely infiltrated with lymph-corpuscles in the immediate neighborhood of the tumor, but without a trace of cancerous elements. HIRSCHMANN.

PANAS and VASSAUX (124) made experimental studies on rab-

bits on tuberculosis of the cornea. The duration of the different periods of the disease was about as follows: Incubation, eight to ten days; ulceration, from the eighth to the twenty-second day; repair, from the twelfth to the forty-fourth day. Sometimes the cornea was destroyed, and sometimes the period of ulceration was absent. The autopsy never showed tuberculosis of the inner organs, though the animals were observed from two to eight months. The process remained entirely confined to the cornea, except when the tuberculous mass entered the anterior chamber after perforation of the cornea. According to Gillet de Grandmont and Parinaud the tuberculous process spreads easily and rapidly from the cornea to other parts of the body.

MARCKWORT.

MAGAWLY (126) saw a lepra nodule the size of a pea at the upper edge of the cornea in a patient twenty-eight years old. He had been suffering for four years from the tuberous form, which had attacked his face, neck, and forearm. The skin was not anæsthetic over the affected parts.

127. DANESI. Della scleritide. *Boll. d'ocul.*, Jan. 5, 1885. vol. vii.

128. PFLÜGER. Melanosarcoma of the sclero-corneal margin, *Ber. d. Univ. Augenkl. zu Bern f.* 1883, Bern, 1885, p. 18.

DANESI (127) has obtained good results in scleritis and episcleritis by subcutaneous injections of pilocarpine. DANTONE.

PFLÜGER (128) removed a melanosarcoma from the sclero-corneal margin. Within the next four weeks he was obliged to destroy new formations of the growth several times with the galvano-cautery and sharp spoon. There were no further relapses. The globe was preserved.

129. EVERSBUSCH, O. The application and action of muriate of cocaine as a local anæsthetic. *Ærztl. Intelligenzbl.*, 1885, Nos. 1 and 2.

130. SCHWEIGGER, C. On cocaine. *Centralbl. f. prakt. Augenhk.*, 1885, p. 1. *Berlin. klin. Wochenschr.*, 1885, No. 4.

131. BERTHOLD. The physiological action of cocaine. *Centralbl. f. med. Wissensch.*, 1885, No. 9.

132. FIEUZAL. De la cocaine en thérapeutique oculaire. *Bull. de la clin.-nat. ophth.*, 1885, vol. ii., No. 4, p. 161.

133. KEYSER, P. D. Cocaine in ophthalmic surgery. *Ther. Gaz.*, Jan., 1885.

134. LUNDY, CH. Oleate of cocaine in ophthalmic practice. *N. Y. Med. Journ.*, vol. xli., No. 9, p. 246.

135. PIERD' HOUY. La cocaina in oculistica. *Riforma med.*, Jan. 12, 1885.

136. EMMERT, E. Cocaine. *Correspondenzbl. f. Schweizer Ærzte*, 1885, vol. xv.

137. MEYER, E. Encore un mot sur la cocaine. *Rev. génér. d'ophth.*, 1885, vol. iv., 3, p. 97.

138. PIERD' HOUY. L' oleate di cocaina in oculistica. *Gazz. med. italiana-lombardia*, 1885, No. 15.

139. WARLOMONT. La cocaine en ophthalmologie. *Ann. d'ocul.*, 1885, p. 151.

140. FRANK. Défaut d' action de la cocaine sur la zone motrice corticale. *Soc. de biol.*, S. du 29. Nov. 1884.

141. PANAS. De l' anesthésie en chirurgie oculaire. *Union méd.*, 1885, p. 1,045.

142. TERRIER. Cocaine et chloroforme. *Semaine méd.*, 1885, No. 11, p. 86.

143. GRASSELLI. La cocaina nella terapia oculare. *Gazz. med. ital.-lombard.*, vol. vii., 4–12.

144. RAMPOLDI. Note pratiche di terapeutica oculare. *Ann. di ottalm.*, vol. xiv., 1.

145. TURNBULL, LAWRENCE. The new local anæsthetic, muriate of cocaine. Philadelphia, 1885, pp. 79.

146. LYONS, A. B. Hydrobromate of cocaine. *N. Y. Med. Rec.*, May 9, 1885.

147. CALHOUN, A. W. Enucleation of an eyeball under cocaine. *Atlanta Med. and Surg. Journ.*, March, 1885.

148. TAYLOR, R. H. Hydrochlorate of cocaine in catarrhal ophthalmia. *Atlanta Med. and Surg. Journ.*, May, 1885.

149. LITTLE, W. C. Therapeutic action of cocaine in a case of diphtheritic conjunctivitis. *Med. and Surg. Rep.*, Feb. 21, 1885.

150. WILSON, W. J. Opacity of the cornea produced by cocaine. *N. Y. Med. Rec.*, May 16, 1885.

151. CARERAS ARAGO. Cocaine in ophthalmology. *Revista de ciencias médicas de Barcelona*, Dec. 10, 1884. *Centralbl. f. prakt. Augenhk.*, 1885, p. 24.

152. KÖNIGSTEIN. The application of cocaine to the eye.

Centralbl. f. d. ges. Therap., 1885, vol. iii., 1, p. 4; *Allg. Wiener med. Ztg.*, 1885, No. 29, p. 590.

153. Fodor, F. Exenteration of the globe under cocaine. *Wiener med. Blätter*, 1884, p. 1576.

154. Just. On cocaine. *Centralbl. f. prakt. Augenhk.*, 1885, p. 61.

155. Wicherkiewicz. Some experiences on the application and therapeutic value of cocaine in ophthalmology. *Centralbl. f. prakt. Augenhk.*, 1885, pp. 85 and 115.

156. Cohn, H. On cocaine. *Centralbl. f. prakt. Augenhk.*, p. 110.

157. Peck, Stevens, Minor. Unpleasant experiences with cocaine. *Centralbl. f. prakt. Augenhk.*, 1885, p. 113.

158. Mayerhausen, G. A case of intense cocaine-intoxication after instillations into the conjunctival sac. *Wiener med. Presse*, 1885, No. 22.

Eversbusch (129) attributes the mydriasis after instillation of cocaine mainly to contraction of the blood-vessels of the iris with anæmia of that membrane. He also refers the slight paresis of accommodation to this cause. The former condition he could demonstrate by means of a Brücke lens in the eye of an albinotic rabbit.

Berthold (131) brought cocaine into direct contact with smooth muscular fibres, the sartorius muscle and heart of the frog, and found that the muscles were paralyzed, while the heart's action was retarded until it finally ceased altogether. When cocaine was injected into the anterior chamber of rabbits' or cats, eyes, total paralysis of the sphincter resulted in a few minutes, as also of the dilating elements of the iris, as was shown by the negative result of irritating the cervical portion of the sympathetic nerve. That cocaine simply paralyzes the sympathetic nerve, and is, therefore, analogous in its action to atropine, was also demonstrated by the fact that injections of a solution into the jugular vein produced an enormous sinking of the intravascular pressure without any trace of a preceding increase. He also found that when the pupil of a rabbit's eye had been made to contract by irritating the fifth nerve, injection of cocaine into the anterior chamber caused it to dilate again.

Schweigger (130) confirms Nieden's experience of the value of cocaine in treating purulent keratitis with the galvano-cautery,

the drug making it possible to destroy even the slightest traces of the ulcer with the glowing loop. He performed sclerotomy in glaucoma, where a narrow pupil is an essential condition, while the eye was under the combined influence of cocaine and eserine, the dilating action of the former being neutralized by the contracting influence of the latter, making the operation painless, and preventing prolapse of the iris. Schweigger had previously put his patients under the influence of chloroform when operating for cataract, but has given this up almost entirely since the introduction of cocaine. He was obliged, however, to modify the technique he had followed during the last few years. Hitherto he had opened the capsule with a toothed forceps, as recommended by Colsmann and Förster, in order to extract as large a piece of the lens capsule as possible. As the pressure of the external muscles of the eye upon the globe is removed during deep chloroform-narcosis, he rarely had loss of vitreous. The tension of the external muscles, however, was not affected by the local cocaine-narcosis, and, as a consequence, the interior of the eye was under greater pressure than in chloroform-narcosis. (This condition must not be confounded with an increase of the intra-ocular pressure. Schweigger only maintains that in cocaine-narcosis the muscles, not being paralyzed, exert some pressure upon the globe, which is not possible in chloroform-narcosis, the muscles being completely paralyzed.—Rev.) Under such conditions prolapse of vitreous could occur more easily, which induced Schweigger to return to the old method of opening the capsule with the cystitome. In squint-operations only the seizing and the cutting of the tendon were painful ; cocaine-narcosis was therefore sufficient for ordinary tenotomy, but for advancement chloroform was preferable.

Fieuzal (132) employed cocaine in operations, both as a mydriatic and as an anæsthetic. In a case of enucleation he produced such complete anæsthesia by injection of cocaine into the conjunctival tissue and instillations into the conjunctival sac, that the patient did not feel any pain.

Emmert (136) made use of cocaine for experimental, diagnostic, and therapeutic purposes. It is well adapted for experimental, operative, and diagnostic purposes in man, as it dilates the pupil and does not affect the accommodation. As a remedial agent it dilates the pupil, raises the lid, contracts the blood-vessels, and produces anæsthesia ; it is most valuable, however, as an anæsthetic for operations upon the surface of the globe.

MEYER (137) lets a drop of a two-per-cent. solution of cocaine fall once or twice upon the cornea for producing anæsthesia, and then keeps the eye open for a short time, so as to obtain a full effect. Even so small a quantity is quite sufficient. Before abscising the iris in iridectomy, he lets fall a few drops upon the iris from his lachrymal syringe, after the incision has been made. A subcutaneous injection of cocaine is useful in Snellen's ectropium-suture. Meyer advises not to inject more than 0.02, as even this small dose, as he found in himself and others, is sufficient to produce slight nausea, in one case even pallor of the face, cold perspiration, and nausea. Meyer does not inject cocaine into the orbit; he prefers exenteration or neurotomy to enucleation and chloroform-narcosis for operations on the lids.

v. MITTELSTÄDT.

PIERD' HOUV (138) and LUNDY (134) have experimented with oleate of cocaine, and found that this preparation by no means equals the hydrochlorate in quickness and intensity of action.

DANTONE.

FRANK (140) did not observe any change in the electric irritability of the motor area of the cerebral cortex after the local application of cocaine. v. MITTELSTÄDT.

PANAS (141) prefers chloroform-narcosis in timid, nervous persons and in children; also in complicated cataracts. Panas is in favor of deep narcosis, and opposed to the mixed narcosis of morphine and atropine proposed by Gayet (*Arch. d'ophth.*, vol. iv., No. 5, p. 385). v. MITTELSTÄDT.

TERRIER (142) read a paper of Dransart, recommending chloroform and cocaine, in order to shorten the narcosis, and thus lessen its dangers where deeper parts (iris, optic nerve, etc.) are concerned. v. MITTELSTÄDT.

RAMPOLDI (144) saw a very annoying hyperæsthesia of the retina, accompanied by a reflex spasm of the lids, disappear in a few days under the use of cocaine. It had existed for seven months and had rendered the patient unfit for any kind of work.

DANTONE.

LAWRENCE TURNBULL (145) gives a history of the botanical character, physiological effects, and chemical constituents of coca erythroxylon, and an account of the introduction of the muriate as an anæsthetic, with a review of the publications up to date.

BURNETT.

LYONS (146) has produced this new salt of cocaine, which he

thinks will have an advantage over others in use, in so far as it is obtained in the form of crystals and is not deliquescent.

BURNETT.

CALHOUN (148) enucleated an eye, which had been wounded with a knife, after having injected the tissues of the orbit with cocaine. But little pain was experienced, though there was depression of the circulation, which required the administration of stimulants. BURNETT.

TAYLOR (148) has found the hydrochlorate of cocaine prompt in relieving acute catarrhal conjunctivitis, usually after three or four applications. BURNETT.

LITTLE (149) instilled a drop of a two-per-cent. solution of cocaine to allay pain, and facilitate handling of the eye. In twenty minutes both upper and lower eyelids were free from œdema, and the chemosis of the conjunctiva was markedly diminished. This condition was maintained by occasional repetitions of the anæsthetic, though it did not prevent a perforation of the cornea. BURNETT.

WILSON (150) reports that after making an iridectomy under cocaine, and using it in lieu of atropine for twenty-four hours, the cornea became hazy and pitted in appearance. On the use of atropine, the opacity cleared up. The same thing occurred in a case of discission of soft cataract in a child ten months old.

BURNETT.

CARERAS ARAGO (151) obtained good results by instilling cocaine in cases of lymphatic, vascular and ulcerous conjunctivitis and kerato-conjunctivitis; also in a case of syphilitic iritis, in which by the alternate use of cocaine and atropine an adhesion was torn which had resisted atropine alone.

According to the observations of KÖNIGSTEIN (152), cocaine acts beneficially in phlyctenular affections, and allays pain in herpes zoster, iritis, cyclitis, glaucoma, and neuralgic ocular affections. Cocaine acted directly upon the sympathetic nerve in the case of a woman suffering from paralysis of the sympathetic nerve of the right side.

FODOR (153) used cocaine in substance and in a three-per-cent. solution in a case of exenteration of the globe on account of panophthalmitis. The patient felt no pain.

JUST (154) calls special attention to the reduction of the intraocular pressure following the instillation of cocaine.

WICHERKIEWICZ (155) found that repeated instillations of a

stronger solution of cocaine reduced the sensibility of the iris also.

COHN (156) found that when there is chemotic thickening and intense injection of the conjunctiva, the condition is not materially affected by cocaine.

KEYSER (133) reports that in seven extractions of cataract which he has made under cocaine, panophthalmitis took place in three, and in one other there was hemorrhage into the anterior chamber. The solution he used was free from micrococci.

BURNETT.

PECK, STEVENS, and MINOR (157) saw peculiar symptoms of collapse after injection of cocaine, similar to those previously observed by Knapp.

MAYERHAUSEN (158) reports that instillation of about fifteen drops of a two-per-cent. solution of cocaine into the conjunctival sac of a girl twelve years old produced irritation in the throat and nausea; the patient was also very listless and tired. These symptoms disappeared after the lapse of twenty-four hours.

XII.—IRIS.

BY DR. NIEDEN.

159. DERBY, H. Iridectomy in chronic iritis. *Trans. Amer. Ophth. Soc.*, 1884.

160. FRANKE. Clinical statistics as to the persistent pupillary membrane. *v. Graefe's Arch. f. Ophth.*, vol. xxx., 4, p. 289.

161. GALLENGA. Osservazione di trapianto dell' epitelio corneale sull' iride. *Giorn. de R. Acc. d. Med. di Torino*, vol. xlviii., 1, 2, 1885.

162. MITTENDORF, W. F. Multiple colobomata of the iris or polycoria congenitalis. *Trans. Amer. Ophth. Soc.*, 1884.

FRANKE (160) found among 3,508 patients, 32 cases (0.9 per cent.) of persistent pupillary membrane. In 14 it was a membrane, in 18 he found only filaments of iris, in 3 cases in both eyes; as was frequently observed, probably the result of the checked growth of the whole eye, which also explains the existence of the pupillary membrane. It occurred in the ratio of 7 cases in the right eye to 5 in the left, and in the female sex in the ratio of 19 to 13 in the male. In 2 cases opacities of the posterior capsule and cortex were also observed. He adds an accurate bibliography.

GALLENGA (161) reports an interesting case of migration of tissue. He found on a piece of iris which he excised in an operation for traumatic cataract, and which was adherent to the corneal scar, besides remnants of blood, pigment-cells, and newly formed connective tissue, a layer of pavement-epithelium covering the anterior surface, firmly united with the membrane and arranged in strata like the corneal epithelium. On another portion of iris which he also excised, but which was not adherent to the cornea, he found no epithelium. The author believes this to be the first case observed in man, and that its development was similar to that of the cysts of the iris. He also mentions two cases of imperfectly developed eyelashes growing from corneal scars which he observed at the clinic at Turin. DANTONE.

MITTENDORF (162) observed two cases of multiple colobomata of the iris occurring in father and daughter. There was no arrest of development in any other part of the eyes. The daughter had compound myopic astigmatism, but V = $\frac{5}{5}\frac{5}{6}$ after correction. In the father, besides the central pupil, there were two below, one larger than the central one, and one smaller situated close to it, both reaching to the periphery of the iris. In the daughter, besides the central one, which was oval, there were four—all at the periphery; one below, one very small one above, one up- and out-ward, and one inward and below. BURNETT.

DERBY (159) gives the history in detail of a case of recurrent iritis in a woman sixty years of age, followed in its varying features through four years. Finally a double iridectomy was performed (but not by the author). For three months after the operations the attacks of inflammation continued, one occurring each week, then gradually ceased. The author is inclined to think that the disease ceased of self-limitation and not on account of the operations. The annoyances from the iridectomies (intolerance of light, etc.) were very great. BURNETT.

XIII.—CHOROID.

163. ALT. Two cases of exudative choroiditis with subsequent detachment of the retina. *Amer. Journ. Ophth.*, Dec., 1884.

164. DUJARDIN. Un cas d' hydrophthalmos congènital. *Journ. de soc. de méd. de Lille*, 1885, vol. v., p. 142.

165. HIRSCHBERG and BIRNBACHER. On metastatic carcinoma of the choroid. *v. Graefe's Arch. f. Ophth.*, vol. xxx., 4, p. 113.

166. NIEDEN, A. Two cases of spontaneous recovery from

affections of the uveal tract after facial erysipelas. *C. f. A.*, vol. ix., p. 80.

ALT (163) gives the histories of two cases of exudative choroiditis in detail, and raises the question whether the detachment of the retina is due to the remedies employed for the choroiditis (iodide of potassium 10 grs. t. i. d.), or to a change in the character of the choroiditis from a plastic to a serous. In both cases the detachment of the retina subsided under the use of injections of pilocarpine. BURNETT.

HIRSCHBERG and BIRNBACHER (165) review briefly the four cases thus far reported of carcinomatous metastasis of the choroid, and add an accurate macro- and micro-scopic description of a new case.

NIEDEN (166) saw in two cases of serous iritis and disseminate choroiditis, respectively, after a severe attack of facial erysipelas, such marked improvement of the ocular affection, that a causal connection between absorption of the exudation and recovery from the erysipelas seems beyond doubt, especially as in one of the cases he saw a renewed affection of Descemet's membrane after reconvalescence from the erysipelas. Nieden, however, utters a warning against the introduction of erysipelas as a therapeutic agent, as has recently been proposed by Cocci.

XIV.—GLAUCOMA.

167. COGGIN, D. D. Glaucoma produced by atropine. *Amer. Journ. Ophth.*, Jan., 1885.

168. JACOBSON, J., Sen. Cases of glaucomatous affections. *v. Graefe's Arch. f. Ophth.*, vol. xxx., 4. p. 157.

169. NOVELLI. Allungamento e strappamento del nervo nasale esterno nella cura del glaucoma. *Boll. d' ocul.*, vol. vii., 6–9, Feb.–May, 1885.

170. PARINAUD. Traitement du glaucome par la paracentèse scléroticale. *Soc. franç. d' ophth.*, Jan. 29, 1885.

171. TERSON. De la scléro-iridectomie dans le glaucome. *Soc. franç. d' ophth.*, Jan. 26, 1885.

JACOBSON (168), after some polemics directed against Mooren's views on glaucoma, endeavors to harmonize the views on some of the questions, and comes to the conclusion that in ordinary glaucoma the amblyopia is the consequence of the excavation. The

latter is due to an increase of the intra-ocular pressure. The diagnosis of chronic glaucoma does not depend upon the presence of a marginal excavation. The cause of the increased pressure is found in the absorption of liquid by the vitreous. The disturbances of color perception are due to ascending atrophy of the optic nerve.

In COGGIN'S (167) case, the attack developed suddenly after atropine (one per cent.), which had been used once or twice. Slight improvement under eserine. BURNETT.

NOVELLI (169) analyzed the thirty-four cases of stretching or tearing of the N. infratrochlearis in glaucoma or ciliary neuralgias, performed by Badal, Abadie, Kacamrow, Masini, and Simi, and comes to the following conclusions : the operation in question only reduces the ciliary pains in glaucoma ; it has, however, only very slight influence on the intra-ocular pressure and on vision. In some cases there was an improvement, even when iridectomy and sclerotomy had failed, in others the condition was made worse. The new operation cannot, therefore, be compared in its results with those of iridectomy and sclerotomy. DANTONE.

PARINAUD (170) has performed paracentesis of the sclera with good results in several cases of glaucoma. Without using a speculum or fixation-forceps he plunges a Graefe knife through the sclera between the inferior and external recti muscles, 8 to 10 *mm.* from the corneal margin, turns it through 90°, and then draws it out, leaving a triangular wound. He operated successfully three cases according to this method : 1. A case of acute glaucoma. 2. A case of acute glaucoma, with posterior synechiæ ; no relapse after two years. 3. A case of painful absolute glaucoma, with an anterior synechia and ectasia of the sclera ; here four paracenteses were necessary ; no relapse after two years. 4. In a case of hemorrhagic glaucoma paracentesis and iridectomy, performed ten days later, failed. MARCKWORT.

TERSON (171) recommends a combination of sclerotomy and iridectomy against glaucoma. Terson makes an incision as in sclerotomy, the portion of the section at the point of entry being sufficiently wide to allow him to seize the iris, draw it out, and cut it off. MARCKWORT.

XV.—SYMPATHETIC OPHTHALMIA.

172. FANO. Documents pour servir à l' histoire de l' ophthalmie sympathique. *Journ. de l' ophth.*, Jan.–April, 1885.

173. RISLEY, S. D. A case of sympathetic neuro-retinitis, with consecutive serous iritis. *Journ. Amer. Med. Ass'n*, Jan. 10, 1885.

174. FOX, L. WEBSTER. Clinical history of a case of sympathetic ophthalmia. *Trans. Amer. Ophth. Soc.*, 1884.

RISLEY'S (173) patient was a boy of fourteen years, who was struck on the left eye by the arrow of a blow-gun, making a wound at the sclero-corneal junction. There was prolapse of iris, which was excised. In about two months the optic disc of the right eye began to show signs of congestion, but there were no signs of inflammation elsewhere. V was correspondingly reduced. Soon afterwards, however, punctate deposits were seen on the posterior surface of the cornea. He was treated with the mercurial bandage. In a month the eye had cleared, and V = $\frac{20}{30}$. He subsequently had another attack of neuritis, associated with convulsions, but recovered V under the same treatment as before.

BURNETT.

WEBSTER FOX (174) reports the case of a boy twelve years of age, who received a cut with a knife in the ciliary region of the left eye, which resulted in loss of V in twenty-four hours, from closure of the pupil. In eighteen days the fellow-eye became affected, and in three weeks from the reception of the injury V was lost from iritis. In six months atrophy of the left globe had taken place, and a like condition was beginning in the other.

BURNETT.

XVI.—LENS.

175. ALT, A. Cataract-extraction followed by death. *Amer. Journ. Ophth.*, Feb., 1885.

176. BAKER, A. R. Report of twenty-seven consecutive cases of senile cataract operated on by the v. Graefe modified linear extraction. *Amer. Journ. Ophth.*, Jan., 1885.

177. BIRNBACHER, ALEXIS. On phakocele. *v. Graefe's Arch. f. Ophth.*, vol. xxx., 4, p. 103.

178. BOS, E. Des cataractes syphilitiques. *Thèse de doct. de Bordeaux*, July, 1884.

179. DICKEY, J. L. A case of congenital ectopia lentis. *Amer. Journ. Med. Sci.*, April, 1885.

180. GALLENGA. Secondo contributo alla studio della maturazione artificiale della cataratta. *Gazz. de cliniche*, 1885, Nos. 4 and 5.

181. LANDESBERG, M. On nephritic cataract (Deutschmann), *v. Graefe's Arch. f. Ophth.*, vol. xxx., 3, p. 143.

182. TEILLAIS. De la luxation spontanée du cristallin. *Soc. franç d'ophth.*, Jan. 27, 1885.

183. WALDHAUER, Père à Mitau. Quatre cas de cataracte diabétique. *Rev. gén. d'ophth.*, 1885, vol. iv., No. 1, p. 1.

184. WEEKS, S. H. Monocular diplopia. *Trans. Amer. Med. Ass'n*, 1884.

BIRNBACHER (177) describes a case of dislocation of the lens, after an ulcerous perforation of the cornea; the lens, still partly clear, appearing like a button in the perforation. The corresponding portion of the uninjured capsule and cicatricial iris-tissue protruded like a hernia. Probably this condition frequently occurs in simple prolapse of the iris after an extensive perforation of the cornea.

BOS (178) describes a rare form of soft cataract, which develops in syphilitic individuals in the secondary stage without any other symptoms, ripens rapidly, but can be checked by energetic antisyphilitic treatment, which is necessary even when an operation is performed. Three cases in young persons. v. MITTELSTÄDT.

LANDESBERG (181) has repeated Deutschmann's investigations on the presence of albumen in the urine in cataract. He examined 376 individuals and found the urine normal in 327, while among 49 he found sugar in 3, sugar and albumen in 2, and albumen only in 44. The results of the microscopic examination were negative in 27 cases, 5 times he found cystitis and twice chronic pyelitis, etc. Of course the presence of albumen in the urine is of no pathognomonic significance, so there were only 17 cases of genuine complications. Thc question of causal connection is therefore still an open one.

DICKEY'S (179) patient when first seen was a girl of thirteen years, with V = $\frac{8}{200}$ in the right and $\frac{2\frac{1}{2}}{200}$ in the left eye. The lens in the R was dislocated upward and inward, occupying about one fourth of the pupillary space; in the L it was directly upward. With + 13 ⊃ + 3c ax 90° V was brought up to $\frac{1\frac{5}{6}}{20}$ in the R, to $\frac{1\frac{5}{6}}{10}$ in the L. The eyes of her ancestors, as far as ascertainable, were good.

BURNETT.

TEILLAIS (182) discusses the etiology of dislocation of the lens, and proposes to classify them as follows: 1, spontaneous; 2. secondary or consecutive; 3, traumatic dislocations. In the discussion which followed Abadie, Gayet, Armaignac, and Prouff ad-

vised extraction of the dislocated lens, while Nicati fears the escape of vitreous. MARCKWORT.

WEEKS (184) reports the case of a boy who received a blow on the bridge of the nose from a bat. Two days after he noticed diplopia. On examination it was found to be monocular, and in the author's opinion was due to irregular astigmatism from dislocation of the lens. The diplopia disappeared on placing a stenopaic slit vertically before the eye. BURNETT.

ALT (175) operated for cataract on a man eighty years old. He was obliged to extract it with a spoon. The wound healed after some keratitis. Twelve days after, he died, apparently from exhaustion. There were no signs of septic infection. The author seems doubtful as to the operation being the cause of death. BURNETT.

BAKER'S (176) results were: eight had V = $\frac{10}{10}$. None were lost, and only one had V = $\frac{20}{100}$. BURNETT.

WALDHAUER (183) reports four extractions of diabetic cataract which healed well. He advises caution in pressing out the cortical masses, as the zonula and hyaloid seem to tear very easily in such cases. v. MITTELSTÄDT.

GALLENGA (180) reports fourteen additional cases of artificial ripening of cataract. In eleven Förster's method of friction of the capsule was adopted; in three, puncture of the capsule. The author concludes that neither method is dangerous, and that under some conditions—for instance, leucoma of the cornea—simple paracentesis of the cornea is preferable to iridectomy. The methods of ripening cataract do not always prevent the formation of secondary cataract and the operations which this necessitates. DANTONE.

XVII. VITREOUS.

185. HÄNSELL. Recherches sur le corps vitré. *Bull. des quinze-vingts*, 1884, p. 170.

HÄNSELL (185) examined three enucleated eyes, and found that glioma spreads not only by displacing the vitreous, but also by developing and proliferating in it. As the glioma develops from cells of the vitreous, which pass into a kind of embryonic condition, it is not a neoplasm of the nervous tissue exclusively. v. MITTELSTÄDT.

XVIII. RETINA AND FUNCTIONAL DISTURBANCES.

186. AUGIER et DUJARDIN. Gliome de la rétine. *Jour. des sci. méd. de Lille*, 1885, p. 89.

187. AYRES, S. C. Anæsthesia of the retina. *Amer. Journ. Ophth.*, Jan., 1885.

188. FULTON, F. Case of retinal hemorrhage, apparently due to simple anæmia. Remarks. *Amer. Journ. Ophth.*, Feb., 1885.

189. HOFFMANN, F. W. Embolism of a branch of the central retinal artery, with a hemorrhagic infarctus. *Zeh. klin. Monatsbl. f. Augenhk.*, vol. xxii., p. 24.

190. LITTLE, W. S. A case of glioma of the retina (double-congenital). *Trans. Amer. Ophth. Soc.*, 1884.

191. MASSEY, E. BELTON. Report of a case of sudden loss of vision following anæsthesia of the fifth nerve, etc. *Journ. of Nerv. and Ment. Dis.*, Oct., 1884.

192. RUMSZEWICZ. Un cas de colobome maculaire. *Rev. gén. d'ophth.*, 1885, vol. iv., No. 71, p. 159.

193. SCHELL, H. S. A case of embolism of the retinal artery. *Trans. Amer. Ophth. Soc.*, 1884.

194. WOLFE. Traitement du décollement de la rétine. *Ann. d'ocul.*, vol. xciii., p. 16.

FULTON (188) reports a case of retinal hemorrhage. It was monocular, and occupied the region of the macula lutea. No other cause but anæmia could be assigned, which, to the reviewer's mind, seems doubtful, since it only affected one eye. Eye-troubles from general causes are, as a rule, binocular; in pernicious anæmia this is always the case. BURNETT.

HOFFMANN (189) observed a case of embolism of the central retinal artery, with hemorrhagic infarctus, in a patient fifty years old, who suddenly became blind in the left eye, after prodromal symptoms extending over many years. The appearance of the fundus was characteristic. The cause must be sought in atheroma of the blood-vessels. The hemorrhages are due to collateral influx. In the right eye there was a neuritic process at the edge of the disc.

SCHELL (193) is inclined to regard a case of sudden loss of vision in the left eye as one of embolism of the retinal artery, in which the plug did not entirely fill the lumen of the vessel. The veins could be completely emptied by massage of the eyeball, a regular current of blood being established some minutes after. There was mitral insufficiency and hypertrophy of the left ventricle. BURNETT.

RUMSZEWICZ (192) found such a small central scotoma in the

case of coloboma of the macula lutea, that only a partial absence of the retina in the region of the coloboma could be assumed. Measurement of its fundus with the ophthalmoscope showed a marked excavation ; besides three scleral or choroidal blood-vessels, it contained only traces of pigment.

AUGIER and DUJARDIN (186) observed a case of glioma in both eyes in a child nine years old. The left eye, in which the glioma had advanced farthest, was enucleated on account of the pain. Death a month and a half later. V. MITTELSTÄDT.

LITTLE (190) reports a case of glioma of the retina in which nothing wrong was noticed in the eyes until the child was five months old. At the end of a year the child was entirely blind. An operation was refused, the tumors gradually increased in size, and the child died at the age of 2 years and 7 months. No *post-mortem*. BURNETT.

WOLFE (194) insists that before operating for detachment of the retina it is necessary first to determine, by inclining the head in various directions, that point at which the subretinal liquid has the greatest tendency to collect, and then to make the incision. He operates in the following manner : After the patient has been chloroformed, he makes a vertical incision through the conjunctiva 12 to 13 *mm.* long, in the region of the detachment, holds the edges of the wound apart with squint-hooks, and rotates the globe to such an extent that a broad needle can be passed through the sclera at the point at which the liquid collects most easily. The needle is then withdrawn without inclining it. If he has reason to suppose that not all of the liquid has escaped, he introduces a silver spatula, and carefully allows the scleral wound to gape a little. After the conjunctival wound has been closed with one or two sutures—sometimes without any,—the eye is bandaged, and the patient kept quiet, as after cataract-operations.

In the *Ann. d'ocul.*, vol. xci., p. 149 (*cf. Arch. f. Augenhk.*, vol. xiv., Rev. No. 340), WOLFE published a case, operated in the manner described above, two weeks after the operation ; in an annotation to the paper just reviewed, he remarks that the condition of the eye in question is thus far (beginning of 1885) very satisfactory. MARCKWORT.

AYRES (187) reports three cases of anæsthesia of the retina, two of which were undoubtedly hysterical. There was marked contraction of the visual field in both cases, and they improved greatly and very promptly under hypodermic injection of strychnia.

The third was in a school-girl of sixteen, who was apparently in perfect health. BURNETT.

MASSEY'S (191) patient, a man forty-eight years of age, was stung on the left cheek by a honey-bee, which was followed by increasing numbness of that side of the face. Two years later the V of the left eye was noticed to become impaired, and in ten days it was totally lost. Dr. Thompson, of Philadelphia, found the disc white, T normal, no glaucoma. R eye, V = $\frac{20}{30}$. A year afterwards the right eye began to fail, and in a week was entirely blind. The ophthalmoscope showed no important changes at the fundus. BURNETT.

XIX.—OPTIC NERVE.

195. BURNETT, SWAN M. Clinical contributions to the study of retrobulbar affections of the optic nerve. *Amer. Journ. Ophth.*, March–April, 1885.

196. FUCHS, E. Lésions anatomiques dans l'atrophie des nerfs optiques. *Soc. franç. d'ophth.*, Jan. 27, 1885.

197. HARLAN, G. C. Two cases of swelling of the optic papilla, possibly congenital. *Trans. Amer. Ophth. Soc.*, 1884.

198. KNAPP, H. Two cases of neuroretinitis, with almost sudden loss of sight in both eyes. *Trans. Amer. Ophth. Soc.*, 1884.

199. NORRIS, W. F. Hereditary atrophy of the optic nerves. *Trans. Amer. Ophth. Soc.*, 1884.

200. VOSSIUS, A. Contribution to the knowledge of the congenital coni. *Zeh. klin. Monatsbl. f. Augenhk.*, vol. xxii, p. 137.

201. WADSWORTH, O. F. A case of myxœdema, with atrophy of the optic nerves. *Trans. Amer. Ophth. Soc.*, 1884.

FUCHS (196) found that atrophy of the optic nerve begins at its periphery, and sometimes also affects primarily a few central fibres; this atrophy, which sometimes occurs in children, is easily overlooked, as, owing to the course of the affected fibres, the blind spot is only slightly enlarged, and the visual field a trifle contracted. MARCKWORT.

BURNETT (195) observed the following cases: Case 1.—Blindness of left eye, rapidly becoming total, followed by atrophy of the disc; return of V in the upper and the lower inner portion of the field; paralysis of the 1, 3, and 7 nerves of the left side; partial

recovery under anti-syphilitic treatment and electricity. Case 2.—Inflammation, probably rheumatic, within the orbit.; abscess; signs of optic neuritis; atrophy of disc; V = 0. Case 3.—Exophthalmus and paralysis of all the muscles of the right eye; absolute blindness; disappearance of the exophthalmus and paralysis under anti-syphilitic treatment; return of some V; white atrophy of the disc; antecedent white atrophy, with loss of the V in the left eye, with complete ophthalmoplegia.

BURNETT.

HARLAN (197) observed two cases of swelling of the optic papilla, possibly congenital. In the first there was M of 3.50 D at the macula, and V = $\frac{20}{10}$; no asthenopia; discs swollen to the extent of 3 or 4 D. In Case 2 there was H of 1.5 D, with a swelling of the disc of 1.5 D; V = $\frac{20}{15}$. In both cases there were the appearances of beginning papillitis. BURNETT.

In neither of KNAPP'S (198) cases, neuroretinitis with almost sudden loss of sight, was there any constitutional affection, though in Case 1 it was thought at first that there was uræmic poisoning. In this case the blindness was permanent, except a small island in the nasal field of the right eye. In the second case vision was completely restored in a month. BURNETT.

NORRIS (199) has had the unusual opportunity of examining the eyes of three generations, in whom atrophy of the optic nerves was hereditary. In the younger generation of seven children all were affected, while their parents were not. The condition, however, was present in the great-grandmother, a granduncle, an uncle, and several cousins. The disease came on as early as the eighth and as late as the thirty-fifth year, and was usually of gradual development. The symptoms were frequent frontal headaches and gradual loss of central vision. There was contraction of the visual field for form—yellow, blue, and red, and in the order given. The ophthalmoscope showed three stages of development: (1) that of cloudy and œdematous swelling, (2) that of lymph-reflexes along the course of the retinal blood-vessels, and (3) that of gradual death of the nerve-tissue. Two of the cases ended in total blindness, and some improved under the use of strychnine.

BURNETT.

VOSSIUS (200) has compiled the literature of the occurrence of coni of the fundus, to which he adds the cases observed by himself. Among 1,655 eyes with anomalies of refraction (M, 741; H, 623; Am, 124; Ah, 140; A. mixt., 27) he found 425 coni

= 25.68 %. Among these were 231 with the coni on the temporal side, 83 with circular coni, 75 with coni downward, 9 with coni on the nasal side, 8 with coni downward and inward, 8 with coni upward and outward, 6 with coni downward and outward, 5 with coni upward. Among the 231 eyes with coni outward there were 222 myopes = 96.1 %, and 9 hypermetropes = 3.9 %. In 25 cases the conus downward was found in both eyes, in 25 in only one eye; among 13 of the latter a conus was also found in another direction; of the remaining cases the other eye was normal in but 5. The conus downward is probably a remnant of the fœtal fissure, and the coni are rudimentary colobomata of the papilla.

WADSWORTH (201) observed a case of myxœdema with atrophy of the optic nerves. In the right eye there was only perception of light; in the left, V = $\frac{2}{10}$. The visual field was contracted in all directions, but mostly upward and outward. The discs were sharply defined, gray, with a bluish tinge; central vessels small.

BURNETT.

XX.—INJURIES AND FOREIGN BODIES (PARASITES).

202. AUB, J. Removal of foreign bodies from the vitreous by aid of the electro-magnet. *Trans. Amer. Ophth. Soc.*, 1884.

203. DEHENNE. Considérations sur les traumatismes oculaires. *Rec. d'ophth.*, Jan., 1885, p. 1.

204. DUJARDIN. Éclat de fer dans la chambre antérieure; extraction avec électro-aimant. *Journ. des sci. méd. de Lille*, 1885, No. 1, p. 1.

205. MEYER, ED. Éclat metallique dans l'humeur vitrée extrait par l'électro-aimant avec rétablissement de la vision. *Soc. franç. d'ophth.*, Jan. 29, 1885.

In four cases reported by AUB (202) there was only one failure; in all the others the eyeball and a considerable amount of V were retained (from $\frac{2}{200}$ to $\frac{2}{10}$). In none of the cases was the attempt at removal made immediately after the accident. BURNETT.

DEHENNE (203) discusses various kinds of injury to the eye, and reports the clinical history of seventeen cases of more or less interest. Dehenne uses a Graefe knife for synechiotomy instead of synechiotomes. In regard to the treatment of serpent ulcer, Dehenne prefers cauterization with the thermo-cautery to Saemisch's operation. MARCKWORT.

DUJARDIN (204) extracted with the electro-magnet a chip of

iron 2 *mm.* long, which had become wedged in the angle of the iris in the upper outer quadrant, where it had been for eight days. Rapid recovery. V. MITTELSTÄDT.

MEYER (205) reports a case of extraction of a chip of iron from the vitreous with the electro-magnet. The eye was not only preserved, but also retained V = $\frac{10}{10}$. The opacities of the vitreous cleared up very rapidly, and Meyer asks if this may have been due to the introduction of the electro-magnet. Referring to this case, Gorecki discusses the beneficial influence of a weak constant current on opacities of the vitreous. MARCKWORT.

XXI.—OCULAR AFFECTIONS IN CONSTITUTIONAL DISEASES.

206. ESKRIDGE, J. T. Tumor of the cerebellum with monocular hemiopia. *Journ. of Nervous and Mental Diseases*, Jan., 1885.

207. FÉRÉ, CH. Trois autopsies pour servir à la localisation cérebrale des troubles de la vision. *Arch. de neurol.*, March, 1885, No. 26, p. 222.

208. HALLAPEAU, H. Essai de localisation d'une cécité accompagnée d'hemichorée. *L'encéphale, Ser. A.*, No. 2, March–April, 1885, p. 182.

209. HENNIUS and HIRSCHBERG. Binocular blindness due to puerperal infection. *C. f. A.*, vol ix., p. 84.

210. HIRSCHBERG, J. A rare case of septic embolism of the eye observed in a child, due to ulcerous endocarditis. *C. f. A.*, vol. ix., p. 33.

211. HIRSCHBERG, J. A case of rheumatic embolism of both eyes in a child. *C. f. A.*, vol. ix., p. 35.

212. JONES, E. W. Retinal hemorrhage in malarial fevers. *Med. Rec.*, June 27, 1885.

213. LAURE. Une observation de cécité des mots à l'exclusion des chiffres et des nombres écrits en chiffres. *Soc. de méd.-chir. de l'hôp. de Lyon*, 13, vol. ii., 1885. *Lyon méd.*, No. 12, p. 430.

214. LEDDA. Ambliopia bilaterale temporano da infezione malarica. *Spallanzani*, vol. xiv., April 4, 1885.

215. NORTON, G. S. The eye as an agent causing headaches and other nervous disturbances. *The Hahnemannian Monthly*, January, 1885.

216. PALMER, S. E., and SPALDING, J. A. Induction of

premature labor in a case of albuminuric retinitis. *Trans. Maine Med. Ass'n*, 1884.

217. PATROUILLARD. Urine à alcaptose. *Journ. des sci. méd. de Lille*, 1885, p. 83.

218. PICQUÉ. Note sur un cas d'affection hépatique ancienne réveillé à la suite d'un traumatisme de l'œil. *Gaz. méd. de Paris*, 1884, p. 64.

219. PITRES. Considérations sur l'agraphie à propos d'une observation nouvelle d'agraphie motrice rare. *Rev. de méd.*, Nov., 1884.

220. WEBSTER, D. A case of double optic neuritis from chronic cerebral meningitis. *Amer. Jour. Ophth.*, Dec. 15, 1884.

221. WILBRAND, H. On concentric limitation of the field of vision, and functional disturbances of the cortex of the cerebrum, and on the dissimilarity of hemianopic defects of the visual field. *Zeh. klin. Monatsbl. f. Augenhk.*, vol. xxiii., p. 73.

ESKRIDGE'S (206) patient was a woman thirty-two years of age, with symptoms pointing to a gross lesion of the brain. On the part of the eye there was double optic neuritis. In the right eye the visual field was free, but in the left there was a temporal hemianopsia which extended quite up to the middle line. On post-mortem a nodular tumor the size of a horse-chestnut was found resting on the upper surface of the right lateral hemisphere of the cerebellum. BURNETT.

In FÉRÉ'S (207) first case, with hemiplegia, hemianæsthesia, and concentric limitation of the visual field, the autopsy revealed: atrophic degeneration of the left pedunculus cerebri, an old apoplexy laterally from the nucleus lentiformis, extending backward through the course of the sensitive fibres, and downward below the third frontal convolution; the two posterior thirds of the inner capsule with the adjacent nucleus lentiformis were of a brownish-yellow color. In the second case, of partial word-blindness, complete sound-blindness, partial aphasia, and right-sided hemiplegia with contractions, where there was also hemianopic limitation of the upper portion of the right side of the visual field without implication of the point of fixation, he found a structural change in the lower portion of the upper parietal lobe, which extended as far as the lower parietal lobe. In the third case there was right-sided temporary hemiplegia and permanent hemianopsia, the line of demarcation passing through the point of fixation,

therein differing from the general type of cerebral hemianopsia, in which the point of fixation is not affected. He found a lesion of the lower surface of the occipital lobe. Féré assumes, like Charcot, in most cases of cerebral amblyopia, a lesion of the posterior third of the inner capsule (carrefour sensitif) of the opposite side, but a cerebral hemianopsia he thinks cannot be located with an equal degree of certainty. He believes, however, that variations in the crossing of the fibres within the visual sphere may produce clinically different symptoms in different individuals with the same lesion, so that in one case hemianopsia, in another amblyopia, or both, may be the result. Féré supports this view by pointing to the anomalies of the gray (Meynert's) commissure and the crossing of the fibres in the pyramids.

v. MITTELSTÄDT.

HALLAPEAU (208) observed, in a man 83 years old, with stenosis of the aorta, sudden blindness in both eyes, together with choreiform movements of the left side of the body and rotary movements. The patient was perfectly conscious; there was no paralysis, no disturbance of sensibility; the movements of the eyes were not affected; the pupils, slightly dilated, immovable. There were no ophthalmoscopic changes. This condition disappeared entirely in the course of a few days, with the exception of a slight dimness of vision. The author localizes the affection in the anterior corpora quadrigemina; there was probably an embolism of the arteries of the right side supplying the anterior portions of the corpora quadrigemina.

v. MITTELSTÄDT.

LAURE (213) observed word-blindness in a woman 74 years old, which, however, was not noticeable for numbers. At first there was a hemiplegia of the right side (apoplexy) lasting eight days, followed by aphasia lasting three months, and then disappearing, with the exception mentioned above. There were also symptoms of an affection of the brain and spinal cord, of which there persisted only weakness of the right side and impairment of intelligence and memory. v. MITTLESTÄDT.

PITRES (219) recognizes three kinds of agraphy: 1, due to word-blindness; 2, due to word-deafness; 3, motor agraphy, or graphoplégie. Each one of these varieties can occur in patients psychically unaffected. The third form is the rarest. In most forms of agraphy there is hemiplegia and aphasia.

v. MITTLESTÄDT.

In WEBSTER'S (220) case there were the usual ophthalmoscopic signs of double optic neuritis, accompanied with severe headache, which had continued for some years. No important changes were found in the urine. V = $\frac{20}{200}$, color-blind. On post-mortem evidences of chronic meningitis were found. BURNETT.

WILBRAND (221) concludes from his investigations (*q. v.*) on concentric limitations of the field of vision in functional disturbances of the cortex of the cerebrum, that when such occur in one centre of vision they produce temporarily, either a total loss of function or concentric limitations of the visual field in the homonymous halves of the retinæ co-ordinated to the affected centre. The extent and similarity of the concentric limitation of the visual field in functional disturbances of both visual centres is dependent upon (1) the area of one visual centre compared with that of the other; (2) on the proportion between the individual smallest fascicular surfaces of the lateral and those of the crossed fascicle, and on the intensity of functional disturbance of each visual centre.

NORTON (215) gives the histories of twenty-eight cases in more or less detail, showing the connection between the various forms of refraction and headache, or other nervous disturbances.

BURNETT.

HENNIUS' (209) observation was that of a woman who became blind in both eyes from metastatic iridochoroiditis, due to puerperal affection, in nine and twenty days respectively; her life, however, was saved. This is the first case of its kind reported.

HIRSCHBERG (211) describes a case of metastatic iridochoroiditis, observed in a child with typhoid symptoms, which terminated fatally. It was due to ulcerous endocarditis, the result of preceding rheumatism of the joints and consecutive mitral insufficiency.

HIRSCHBERG (210) reports a case of septic embolism, after rheumatism of the joints, observed in a child one and a half years old, from which it recovered, followed by exudative purulent iridochoroiditis, and later, dislocation of the lens of one eye. No organic lesion of the heart could be detected afterwards.

JONES (212) observed in all, twelve cases in which hemorrhage in the retina accompanied malarial fevers. The hemorrhages usually occur after the first week of illness. In only one case did atrophy of the nerve occur. His treatment was quinine, ergot, and iron. BURNETT.

LEDDA (214) saw atrophy of the optic nerve in a person much reduced by malaria, with bilateral temporal amblyopia.

DANTONE.

The medical history (216) is by Dr. PALMER. The induction of premature labor was followed by a return of vision, with disappearance of the retinitis. Dr. SPALDING adds to this history a valuable abstract of all reliable cases of a similar nature hitherto published in prominent journals. BURNETT.

PATROUILLARD (217) found in a woman with paralysis of the muscles of the right eye 6.1 *grms.* sugar per litre in the urine. This sugar, however, produced no defection of polarized light. Patrouillard classifies this kind of sugar with the substance called alcaptose. v. MITTELSTÄDT.

PICQUÉ (218) saw symptoms of an affection of the liver follow a blow upon the eye, resulting in blindness, without any attending pain, in an apparently healthy man, forty-four years old; ascites, icterus, diarrhœa. Death two weeks later. The liver was enlarged, its surface partly granular, and united with the peritoneum. Picqué thinks that this case tends to confirm Verneuil's views of the evil influence of injuries on existing visceral affections.

v. MITTELSTÄDT.

MISCELLANEOUS NOTES.

The **A. v. Graefe** prize, founded by the late Prof. v. Welz, M.D., of Würzburg, has been awarded to Dr. JULIUS SAMELSOHN, of Cologne, for his paper **"On the Anatomy and Physiology of Retrobulbar Neuritis,"** published in *Graefe's Arch. f. Ophth.*, vol. xxviii., 1, p. 1.

The **Graefe medal**, founded by the Ophthalmological Society of Heidelberg, in honor of, and to be given every ten years to, the man that deserves the greatest credit in the advancement of ophthalmology, has been unanimously awarded to Prof. HERMANN VON HELMHOLTZ, in Berlin.

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